Solicitation No. VA-101-10-RP-0130
Project No. 646PM2500

Department of Veterans Affairs

Specifications

For: CARES CONSOLIDATION PROJECTS
RESEARCH OFFICE BUILDING – BUILDING 30

At: VA Pittsburgh Healthcare System
University Drive Division
Pittsburgh, PA 15240-1005

Issue: August 18, 2010

Amendment	
No.	**Date**

Property of Department of Veterans Affairs

Volume 1 OF 2
SPECIFICATIONS
Divisions 00 – 09

Set #_____

SECTION 00 01 15
LIST OF DRAWING SHEETS

The drawings listed below accompanying this specification form a part of the contract.

Drawing No.	Title
GS0-000	COVER SHEET
GS0-001	DRAWING INDEX
GS0-002	ABBREVIATIONS AND SYMBOLS
GS0-003	CODE ANALYSIS - LIFE SAFETY
GS0-004	CODE ANALYSIS - LIFE SAFETY
GS0-005	BASEMENT - BUILDING AREA & PROGRAM SQ FT
GS0-005A	BASEMENT ALT - BUILDING AREA & PROGRAM SQ FT
GS0-006	GROUND FLOOR - BUILDING AREA & PROGRAM SQ FT
GS0-007	FIRST FLOOR - BUILDING AREA & PROGRAM SQ FT
GS0-008	SECOND FLOOR - BUILDING AREA & PROGRAM SQ FT
GS0-009	BRIDGE & ROOF PLAN - BUILDING AREA & PROGRAM SF
GS0-010	SAMPLE CPM NETWORK
CIVIL/SITE	
CM1-100	MINE GROUTING PLAN – RESEARCH OFFICE BUILDING
CS0-000	SITE SEQUENTIAL PHASING PLAN
CS1-000	SITE EXISTING CONDITIONS PLAN
CS2-000	SITE DEMOLITION PLAN
CS4-000	SITE GRADING PLAN
CS5-000	SITE LAYOUT PLAN
CS5-900	SITE DETAILS
CS6-000	SITE EROSION & SEDIMENTATION PLAN
CS6-900	SITE EROSION & SEDIMENTATION CONTROL DETAILS
CS7-000	SITE STORMWATER & SANITARY SEWER PLAN
CS7-900	SITE STORM & SANITARY SEWER CONSTRUCTION DETAILS
LANDSCAPE	
LS1-000	SITE LANDSCAPE PLAN
STRUCTURAL	
SS0-101	GENERAL NOTES
SS0-102	SPECIAL INSPECTIONS INFORMATION

SS1-101	BASEMENT FLOOR AND FOUNDATION PLAN
SS1-101.1	BASEMENT AND GROUND FLOOR - ALTERNATE 1
SS1-111	GROUND FLOOR FRAMING PLAN
SS1-121	FIRST FLOOR FRAMING PLAN
SS1-131	SECOND FLOOR FRAMING PLAN
SS1-141	ROOF FRAMING PLAN
SS1-151	HIGH ROOF FRAMING PLAN
SS1-161	BRIDGE PLANS
SS1-171	DROP-OFF CANOPY PLANS
SS2-101	BRIDGE ELEVATIONS AND SECTIONS
SS3-101	TYPICAL CONCRETE SECTIONS AND DETAILS
SS3-102	FOUNDATION DETAILS
SS3-103	CONCRETE - SECTIONS AND DETAILS
SS5-101	TYPICAL STEEL SECTIONS AND DETAILS
SS5-102	TYPICAL STEEL SECTIONS AND DETAILS
SS5-103	STEEL - SECTIONS AND DETAILS
SS5-104	STEEL - SECTIONS AND DETAILS
SS5-105	STEEL - SECTIONS AND DETAILS
SS5-106	STEEL - SECTIONS AND DETAILS
SS5-107	STEEL - SECTIONS AND DETAILS
SS5-108	STEEL - SECTIONS AND DETAILS
SS6-101	COLUMN SCHEDULE
SS6-101.1	COLUMN SCHEDULE - ALTERNATE 1

ARCHTITECTURAL

AD1-101	DEMOLITION PLANS
AS1-101	BASEMENT FLOOR PLAN
AS1-101A	BASEMENT FLOOR PLAN ALTERNATE #1
AS1-111	GROUND FLOOR PLAN
AS1-111A	GROUND FLOOR ALT. #2 - DEMOUNTABLE PARTITIONS
AS1-113	GROUND FLOOR - BRIDGE
AS1-121	FIRST FLOOR PLAN
AS1-121A	FIRST & SECOND FLOOR ALT. #2 DEMOUNTABLE PARTITIONS
AS1-131	SECOND FLOOR PLAN
AS1-132	BRIDGE PLAN
AS1-133	THIRD FLOOR BRIDGE
AS1-141	ROOF 1-PLAN
AS1-142	HIGH ROOF PLAN
AS1-143	BRIDGE ROOF PLAN

AS1-301	BASEMENT FLOOR INTERIOR SIGNAGE PLAN
AS1-311	GROUND FLOOR INTERIOR SIGNAGE PLAN
AS1-321	FIRST FLOOR INTERIOR SIGNAGE PLAN
AS1-331	SECOND FLOOR INTERIOR SIGNAGE PLAN
AS1-341	BRIDGE & ROOF INTERIOR SIGNAGE PLANS
AS2-101	ENLARGED PLANS
AS2-102	GUARD BOOTH PLANS, SECTIONS, ELEVATIONS & DETAILS
AS2-301	PLAN DETAILS-EXTERIOR WALL
AS2-302	PLAN DETAILS-EXTERIOR WALL
AS2-303	PLAN DETAILS-EXTERIOR WALL
AS2-304	PLAN DETAILS-PIERS
AS2-310	PLAN DETAILS-BRIDGE
AS2-401	ENTRANCE CANOPY PLANS
AS2-402	SERVICE ENTRANCE CANOPY PLANS
AS3-101	SOUTH BUILDING ELEVATIONS
AS3-102	EAST BUILDING ELEVATIONS
AS3-103	NORTH BUILDING ELEVATIONS
AS3-104	WEST BUILDING ELEVATIONS
AS3-105	PARTIAL BLDG ELEVATION - MECHANICAL COURTYARD
AS3-106	PARTIAL ENLARGED BUILDING ELEVATION - BRIDGE
AS3-201	CANOPY ELEVATIONS
AS4-101	BUILDING SECTIONS
AS4-102	BUILDING SECTIONS
AS4-103	BUILDING SECTIONS
AS4-104	PARTIAL BUILDING SECTIONS - BRIDGE
AS4-201	CANOPY SECTIONS AND DETAILS
AS4-301	CANOPY SECTION DETAILS
AS4-302	CANOPY SECTION DETAILS
AS4-303	CANOPY SECTION DETAILS
AS4-305	CANOPY SECTION DETAILS
AS5-101	WALL SECTIONS
AS5-102	WALL SECTIONS
AS5-102ALT	WALL SECTIONS
AS5-103	WALL SECTIONS
AS5-104	WALL SECTIONS
AS5-105	WALL SECTIONS
AS5-106	WALL SECTIONS
AS5-107	WALL SECTIONS
AS5-108	WALL SECTIONS

AS5-109	WALL SECTIONS
AS5-110	WALL SECTIONS
AS5-111	WALL SECTIONS
AS5-112	WALL SECTIONS
AS5-113	WALL SECTIONS
AS5-114	WALL SECTIONS
AS5-115	WALL SECTIONS
AS5-116	WALL SECTIONS
AS5-117	WALL SECTIONS
AS5-117ALT	WALL SECTIONS
AS5-118	WALL SECTIONS ENTRANCE PIER
AS5-119	WALL SECTIONS
AS5-120	WALL SECTIONS
AS5-121	WALL SECTIONS
AS5-201	WALL SECTION DETAILS
AS5-202	WALL SECTION DETAILS
AS5-203	WALL SECTION DETAILS
AS5-204	WALL SECTION DETAILS
AS5-205	WALL SECTION DETAILS
AS5-206	WALL SECTION DETAILS
AS5-207	BUILDING TYPICAL ROOF DETAILS
AS5-208	BUILDING TYPICAL ROOF DETAILS
AS5-209	BUILDING ROOF DETAILS
AS5-301	BUILDING SECTION DETAILS-BRIDGE
AS5-302	BUILDING SECTION DETAILS-BRIDGE
AS5-303	BUILDING SECTION DETAILS-BRIDGE
AS5-304	BUILDING SECTION DETAILS-BRIDGE
AS6-101	ENLARGED STAIR PLANS & SECTIONS
AS6-102	ENLARGED STAIR PLANS AND SECTIONS
AS6-103	ENLARGED ELEVATOR PLANS & SECTIONS
AS6-201	STAIR DETAILS
AS6-202	ELEVATOR DETAILS
AS7-101	INTERIOR ELEVATIONS
AS7-102	INTERIOR ELEVATIONS
AS7-103	INTERIOR ELEVATIONS
AS7-150A	DEMOUNTABLE PARTITION ELEVATIONS - ALTERNATE #2
AS7-151A	DEMOUNTABLE PARTITION ELEVATIONS - ALTERNATE #2
AS7-152A	DEMOUNTABLE PARTITION ELEVATIONS - ALTERNATE #2
AS7-201	CASEWORK SECTIONS

AS7-202	CASEWORK SECTIONS
AS8-101	DOOR SCHEDULES
AS8-102	DOOR/FRAME TYPES AND DETAILS
AS8-202	EXTERIOR WINDOW AND CURTAIN WALL TYPES
AS8-301	CURTAINWALL DETAILS
AS8-401	PARTITION TYPES
AS9-101	BASEMENT FLOOR REFLECTED CEILING PLAN
AS9-111	GROUND FLOOR REFLECTED CEILING PLAN
AS9-111A	GROUND FLOOR REFLECTED CEILING PLAN - ALTERNATE #2
AS9-121	FIRST FLOOR REFLECTED CEILING PLAN
AS9-121A	FIRST FLOOR REFLECTED CEILING PLAN - ALTERNATE #2
AS9-131	SECOND FLOOR REFLECTED CEILNG PLAN
AS9-141	STAIR TOWER & BRIDGE REFLECTED CEILING PLAN
AS9-151	ENLARGED CEILING PLANS
AS9-152	ENLARGED CEILING PLANS
AS9-153	REFLECTED CEILING PLAN DETAILS
AS9-154	REFLECTED CEILING PLAN DETAILS
AS9-211	GROUND FLOOR ACCESS FLOORING PLAN
AS9-221	FIRST FLOOR ACCESSING FLOORING PLAN
AS9-231	SECOND FLOOR ACCESS FLOORING PLAN
AS9-300	ROOM FINISH SCHEDULES & LEGEND
AS9-311	GROUND FLOOR FINISH PLAN
AS9-321	FIRST AND SECOND FLOOR FINISH PLAN
AS9-341	BRIDGE FINISH PLAN

MECHANICAL

MH0-101	HVAC SYMBOLS, ABBREVIATIONS AND GENERAL NOTES
MHS-101	HAVE SITE STEAM PIPING PLANS
MH1-101	BASEMENT FLOOR PLAN – HVAC DUCTWORK
MH1-101A	BASEMENT FLOOR PLAN – HVAC DUCTWORK – ALTERNATE #1
MH1-111	GROUND FLOOR PLAN – HVAC DUCTWORK
MH1-121	FIRST FLOOR PLAN – HVAC DUCTWORK
MH1-131	SECOND FLOOR PLAN – HVAC DUCTWORK
MH1-132	BRIDGE PLAN – HVAC DUCTWORK
MH1-141	ROOF PLAN – HVAC DUCTWORK
MH1-201	BASEMENT FLOOR PLAN – HVAC PIPING
MH1-201A	BASEMENT FLOOR PLAN – HVAC PIPING – ALTERNATE #1
MH1-211	GROUND FLOOR PLAN – HVAC PIPING
MH1-221	FIRST FLOOR PLAN – HVAC PIPING

MH1-231	SECOND FLOOR PLAN – HVAC PIPING
MH1-241	ROOF PLAN – HVAC PIPING
MH2-101	ENLARGED BASEMENT FLOOR PLAN – HVAC DUCTWORK
MH2-101A	ENLARGED BASEMENT FLOOR PLAN – HVAC DUCTWORK – ALTERNATE #1
MH2-102	ENLARGED BASEMENT FLOOR PLAN – HVAC DUCTWORK
MH2-102A	ENLARGED BASEMENT FLOOR PLAN – HVAC DUCTWORK – ALTERNATE #1
MH2-103	ENLARGED BASEMENT FLOOR PLAN – HVAC DUCTWORK
MH2-103A	ENLARGED BASEMENT FLOOR PLAN – HVAC DUCTWORK – ALTERNATE #1
MH2-201	ENLARGED BASEMENT FLOOR PLAN – HVAC PIPING
MH2-201A	ENLARGED BASEMENT FLOOR PLAN – HVAC PIPING – ALTERNATE #1
MH2-202	ENLARGED BASEMENT FLOOR PLAN – HVAC PIPING
MH2-202A	ENLARGED BASEMENT FLOOR PLAN – HVAC PIPING – ALTERNATE #1
MH2-203	ENLARGED BASEMENT FLOOR PLAN – HVAC PIPING
MH2-203A	ENLARGED BASEMENT FLOOR PLAN – HVAC PIPING – ALTERNATE #1
MH2-204	PARTIAL ENLARGED PIPING PLANS - BOILER AND CHILLER PLANTS
MH3-101	HVAC SECTIONS
MH4-101	HVAC DUCTWORK RISER DIAGRAMS
MH4-102	HVAC HOT WATER RISER DIAGRAM
MH4-103	HVAC CHILLED WATER RISER DIAGRAM
MH6-101	HVAC SCHEDULES
MH6-102	HVAC SCHEDULES
MH6-103	HVAC SCHEDULES
MH7-101	HVAC SHEETMETAL DETAILS
MH7-102	HVAC PIPING DETAILS
MH7-103	HVAC PIPING DETAILS
MH7-104	HVAC UNIT, DEVICE AND CONTROLS DETAILS AND DIAGRAMS
MH7-105	HVAC SPLIT SYSTEM DIAGRAMS
MH7-106	HVAC SEQUENCE OF OPERATIONS
MH7-107	HVAC POINTS LIST AND CONTROL SYSTEM ARCHITECTURAL DIAGRAM

PLUMBING

Pl1-100	FOUNDATION FLOOR PLAN PLUMBING
PL1-100A	FOUNDATION FLOOR PLAN PLUMBING – ALTERNATE #1
Pl1-101	BASEMENT FLOOR PLAN PLUMBING
PL1-101A	BASEMENT FLOOR PLAN PLUMBING – ALTERNATE #1
Pl1-111	GROUND FLOOR PLAN PLUMBING
Pl1-121	FIRST FLOOR PLAN PLUMBING
Pl1-131	SECOND FLOOR PLAN PLUMBING
Pl1-132	BRDIGE PLAN/BRIDGE ROOF PLAN PLUMBING

Pl1-141	ROOF PLAN PLUMBING
Pl1-151	HIGH ROOF & HELIPORT PLAN PLUMBING
PL2-101	ENLARGED FLOOR PLANS PLUMBING
PL4-101	RESEARCH OFFICE BDLG PLUMBING DIAGRAMS
PL4-102	RESEARCH OFFICE BDLG PLUMBING DIAGRAMS
PL4-103	RESEARCH OFFICE BDLG PLUMBING DIAGRAMS
PL7-101	RESEARCH OFFICE BDLG PLUMBING DETAILS
PS5-000	SITE PLAN PLUMBING

FIRE PROTECTION

FP0-001	RESEARCH OFFICE BUILDING FIRE PROTECTION SCHEDULES, GENERAL NOTES AND SYMBOLS
FP1-101	BASEMENT FLOOR PLAN FIRE PROTECTION
FP1-101A	BASEMENT FLOOR PLAN FIRE PROTECTION – ALTERNATE #1
FP1-111	GROUND FLOOR PLAN FIRE PROTECTION
FP1-121	FIRST FLOOR PLAN FIRE PROTECTION
FP1-131	SECOND FLOOR PLAN FIRE PROTECTION
FP1-132	BRIDGE PLAN FIRE PROTECTION
FP1-141	ROOF FLOOR PLAN FIRE PROTECTION
FP1-151	HIGH ROOF & HELIPORT PLAN FIRE PROTECTION
FP4-101	RESEARCH OFFICE BDLG FIRE PROTECTION DIAGRAMS
FP7-101	RESEARCH OFFICE BDLG FIRE PROTECTION DETAILS

FA1-001	FIRE ALARM SYMBOLS AND LEGEND
FA1-101	FIRE ALARM BASEMENT FLOOR PLAN
FA1-101A	FIRE ALARM BASEMENT FLOOR PLAN - ALTERNATE
FA1-102	FIRE ALARM BASEMENT PLAN BLDG 1
FA1-111	FIRE ALARM GROUND FLOOR PLAN
FA1-121	FIRE ALARM 1ST FLOOR PLAN
FA1-131	FIRE ALARM 2ND FLOOR PLAN
FA1-132	FIRE ALARM BRIDGE FLOOR PLAN
FA1-141	FIRE ALARM ROOF FLOOR PLAN
FA4-101	FIRE ALARM RISER DIAGRAMS

ELECTRICAL

EG0-101	ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES
EG0-102	ELECTRICAL SYMBOLS
ED0-201	ELECTRICAL DEMOLITION SITE PLAN
ES0-201	ELECTRICAL SITE PLAN

EL1-101	LIGHTING BASEMENT PLAN
EL1-101A	LIGHTING BASEMENT PLAN – ALTERNATE
EL1-111	LIGHTING GROUND FLOOR PLAN
EL1-121	LIGHTING 1ST FLOOR PLAN
EL1-131	LIGHTING 2ND FLOOR PLAN
EL1-132	LIGHTING BRIDGE PLAN
EL1-141	LIGHTING ROOF PLAN
EP1-101	POWER BASEMENT PLAN
EP1-101A	POWER BASEMENT PLAN – ALTERNATE #1
EP1-111	POWER GROUND FLOOR PLAN
EP1-121	POWER 1ST FLOOR PLAN
EP1-131	POWER 2ND FLOOR PLAN
EP1-132	POWER BRIDGE PLAN
EP1-141	POWER ROOF PLAN
EP2-201	PANEL ELEVATIONS
EP2-202	PANEL ELEVATIONS
EP3-101	GROUNDING LOOP PLANS & DETAILS
EP4-201	ENLARGED POWER PLANS
EP4-202	ENLARGED POWER PLANS
EP5-201	POWER RISER DIAGRAM
EP5-202	SINGLE LINE DIAGRAM
EP6-101	LIGHTING FIXTURE SCHEDULE
ES6-103	LIGHTING RELAY PANEL SCHEDULES
ES6-104	TRANSFORMER AND FEEDER SCHEDULES
ES6-201	ELECTRICAL PANELBOARD SCHEDULES - BASEMENT
ES6-202	ELECTRICAL PANELBOARD SCHEDULES - BASEMENT
ES6-211	ELECTRICAL PANELBOARD SCHEDULES – GROUND FLOOR
ES6-212	ELECTRICAL PANELBOARD SCHEDULES - GROUND FLOOR
ES6-221	ELECTRICAL PANELBOARD SCHEDULES – 1ST FLOOR
ES6-222	ELECTRICAL PANELBOARD SCHEDULES – 1ST FLOOR
ES6-231	ELECTRICAL PANELBOARD SCHEDULES – 2ND FLOOR
ES6-232	ELECTRICAL PANELBOARD SCHEDULES – 2ND FLOOR
ES6-233	ELECTRICAL PANELBOARD SCHEDULES – 2ND FLOOR
ES7-101	ELECTRICAL DETAILS
ES7-102	ELECTRICAL DETAILS
ES7-103	ELECTRICAL DETAILS
ES7-104	ELECTRICAL DETAILS
ES7-105	ELECTRICAL DETAILS
ES7-106	ELECTRICAL DETAILS

ES7-107	ELECTRICAL DETAILS
ES7-108	ELECTRICAL DETAILS
ES7-109	ELECTRICAL DETAILS

TELECOMMUNICATIONS

ET0-001	TELECOMMUNICATION SYMBOLS AND ABBREVIATIONS
TD0-201	TELECOMMUNICATION DEMOLITION SITE PLAN
TS0-201	TELECOMMUNICATION SITE PLAN
ET1-101	TELECOMMUNICATION BASEMENT FLOOR PLAN
ET1-101A	TELECOMMUNICATION BASEMENT PLAN - ALTERNATE
ET1-102	TELECOMMUNICATION UNDERGROUND PLAN
ET1-111	TELECOMMUNICATION GROUND FLOOR PLAN
ET1-121	TELECOMMUNICATION 1ST FLOOR PLAN
ET1-131	TELECOMMUNICATION 2ND FLOOR PLAN
ET1-132	TELECOMMUNICATION BRIDGE PLAN
ET1-133	TELECOMMUNICATION 3RD FLOOR PLAN BLDG 1
ET1-134	TELECOMMUNICATION 4TH FLOOR PLAN BLDG 1
ET1-135	TELECOMMUNICATION 5TH FLOOR PLAN BLDG 1
ET1-141	TELECOMMUNICATION ROOF FLOOR PLAN
ET2-101	ENLARGED TELECOMMUNICATION PLAN
ET3-101	TELECOMMUNICATION ELEVATIONS
ET3-102	TELECOMMUNICATION RACK ELEVATIONS
ET4-101	TELECOMMUNICATION RISERS
ET7-101	TELECOMMUNICATION FACEPLATES & PATHWAYS DETAILS
ET7-102	TELECOMMUNICATION DETAILS

VERTICAL TRANSPORTATION

VT01	GENERAL ELEVATOR INFORMATION
VT02	PLANS AND HOISTWAY SECTION ELEVATORS 1 AND 2
VT03	PLANS ELEVATORS 3 AND 4
VT04	HOISTWAY SECTION ELEVATORS 3 AND 4

HELIPAD DESIGN

HP-G-1	HELIPORT GENERAL ARRANGEMENT PLAN AND NOTES
HP-G-2	HELIPORT AERONAUTICAL PLAN, PAINT PLAN AND FLIGHT
HP-S-1	HELIPORT STRUTURAL FRAMING PLAN AND NOTES
HP-S-2	HELIPORT STRUCTURAL SECTIONS
HP-S-3	HELIPORT STRUCTURAL SECTIONS
HP-S-4	HELIPORT STRUCTURAL SECTIONS, NOTES AND SCHEDULE

HP-M-1	HELIPORT MECHANICAL PLANS AND NOTES
HP-M-2	HELIPORT MECHANICAL DETAILS AND SECTIONS
HP-E-1	HELIPORT ELECTRICAL PLANS, NOTES AND SCHEDULE
HP-E-2	HELIPORT ELECTRICAL DETAIL

- - - END - - -

DEPARTMENT OF VETERANS AFFAIRS
MASTER SPECIFICATIONS
TABLE OF CONTENTS
Section 00 01 10

The "M" after the date denotes that the document is now in dual Metric/English.

The "M" after the date denotes that the document is now in dual Metric/English.

The "M" after the date denotes that the document is now in dual Metric/English.

The "M" after the date denotes that the document is now in dual Metric/English.

- - -END- - -

The "M" after the date denotes that the document is now in dual Metric/English.

gai consultants

REPORT

Geotechnical Exploration

VA Research Office Building
Oakland Campus
Pittsburgh, Pennsylvania

GAI Project Number: C060465.00.002
December 2006

Prepared for: Astorino
227 Fort Pitt Boulevard
Pittsburgh, Pennsylvania 15222

Prepared by: GAI Consultants
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

. . . transforming ideas into reality

Table of Contents

Tables

Figures

Drawings

Appendices

Introduction

This report presents the results of a geotechnical exploration to develop criteria for design of foundations and earth retaining structures for a proposed research office building to be constructed at the Veterans Administration (VA) Hospital site in Pittsburgh, Pennsylvania.

Site

The proposed building is to be located in the predominately urban Oakland section of Pittsburgh, Pennsylvania, as shown on Figure 1. The VA Hospital site is situated on a hilltop above the University of Pittsburgh campus and is generally surrounded by university facilities. The new research office building will be west of the existing hospital in the approximate area shown in Figure 2. Much of the area of the new construction is currently occupied by existing buildings and parking lots. The current ground in the immediate vicinity of the new building is at approximate elevation of 1160 feet (USGS datum).

Proposed Facilities

GAI understands that the new building will have three to four stories above grade and a small partial basement for utilities extending one-story below grade. No significant regrading is planned around the new building. However, excavation and demolition of the existing buildings will be required to construct the new structure.

Other Background Data

The existing hospital building adjacent to the proposed research office building is to remain during the construction of the new facility and will need to be protected from damage during and after construction activities.

Scope of Work

The scope of GAI's geotechnical engineering services for this exploration included:

- Review of background literature for subsurface information;
- Retain a qualified drilling contractor to perform the drilling and sampling;
- Establish boring locations and monitor the subsurface exploration;
- Prepare field classification sheets of the borings;
- Select samples and perform laboratory tests; and
- Prepare a report that includes a plan of borings, the logs of the borings, the results of laboratory tests, and recommendations for the design of foundations and basement retaining walls for the proposed structure.

The scope did not include any assessment of the site for potential environmental hazards.

Authorization

Astorino of Pittsburgh, PA is the architect for the proposed parking facility. The Department of Veteran Affairs of Washington, D.C. is the owner. This exploration was authorized by Astorino.

Geology and Mining

Geology

The site is located in the Pittsburgh Low Plateau Section of the Appalachian Plateau Physiographic Province. This region is characterized by nearly flat-lying sedimentary strata with structural features of this province predominately in a series of northeast-southwest trending gentle ridges and valleys. The study area has been dissected and eroded by many small branching streams, resulting in rugged, steep hillsides with valleys containing alluvial material.

Rock at the project site is of Pennsylvanian age, belonging to the lower Pittsburgh Formation of the Monongahela Group. Figure 3 presents a generalized geologic section of Allegheny County. The Pittsburgh formation, consisting of cyclic sequences of sandstone, shale, siltstone, limestone and coal,

extends from the base of the Uniontown coal seam to the base of the Pittsburgh coal. The strata are commonly interbedded and change lithologically over short lateral distances. Structurally, the site is located just east of the McMurray synclinal axis with a local rock strata dip to the southwest at approximately 10 feet per mile.

Mining

Previous deep mining activities are indicated by the Coal Resources of Allegheny County (Dodge, 1985). The mining method was most likely room and pillar method based on the mining technique in the early 1900's, although no specific mining dates are known. Review of available mining references and information obtained during GAI's subsurface investigations at other areas of the VA property indicates that the site is undermined in the Pittsburgh coal. The depth below existing grade to the base elevation of the Pittsburgh coal at about 1060 feet is about 100 feet. The thickness of the seam is estimated to be 10 feet.

A former mine fire was northwest of the project site within the mine according to the Map of Coal Mining Features, Allegheny County, Pennsylvania (Davies, Pomeroy, Kohl, 1976). Information on the University of Pittsburgh's original campus concept indicated that a part of the mining operation was on fire, and other literature indicated that smoke was emitting from the hillside during construction in the early 1900's.

The original VA hospital constructed in the early 1950's included grouting at the mine interval to prevent mine subsidence. It was indicated to GAI by VA personnel that grouting was also performed for the building addition placed adjacent to the south side of the original building in the 1990's. The 1990's grouting program did not require much grout, most likely due to the lateral extent of the grouting program for the original building. Grouting was also done for the parking garage currently under construction south of the proposed mental health building, and is planned for the site of the proposed mental health building east of the main hospital building.

Seismicity

The site is located in an area anticipated to have a 1.0 second spectral response acceleration of 0.05 G and a 0.2 second spectral response acceleration of 0.13 G, according to the 2006 International Building Code prepared by the International Code Council. The new building will be founded in an area with a shallow depth to rock. Therefore, the class definition is Class B, and the corresponding site coefficients of Fs and Fv are both 1.0. Thus, the adjusted 1.0 second spectral response acceleration is 0.05 G, and the adjusted 0.2 second spectral response acceleration is 0.13 G, for this site. No currently active faults are known to be present in the Southwestern region of Pennsylvania.

Subsurface Exploration

Equipment and Methods

Pennsylvania Drilling Company of McKees Rocks, Pennsylvania drilled a total of nine borings between November 6, 2006 and November 15, 2006 under subcontract to GAI. The locations of the borings are shown on the attached GAI Drawing D-E002. The drilling and sampling was conducted with a CME 45 drill rig. Soil sampling was conducted using standard penetration tests (ASTM Designation: D 1586) in conjunction with split barrel sampling at three-foot intervals. Hollow stem augers were used to maintain an open hole between soil samples. Soil sampling was conducted until rock was encountered, when sampling resistance exceeded 50 blows per 6 inches. The borings were then advanced into rock with NQ-II wire line coring tools which produce core samples approximately 2 inches in diameter (ASTM Designation: D 2113). The samples were visually identified, cores measured, and percentage of core recovery and Rock Quality Designation (RQD) values were calculated. The field classification sheets for the borings prepared by GAI are presented in Appendix A, and data from the borings is summarized in Table 1.

Soils

The surface at the locations of borings was an asphalt pavement at about half the boring locations and landscaped areas at the others. Backfill of silty clay and/or sandy silt with rock fragments was

encountered in some of the borings. Beneath this was natural soils ranging from silty clay and sandy silt with rock fragments and/or decomposed sandy shale or sandstone. The total soil thickness varied from 4 to 19 feet, and the soil ranged form soft to very stiff or very loose to dense. The very stiff decomposed rock was sampled without coring, yet it retained the structure and texture characteristics of the parent material.

Rock

The depth to the top of rock ranged from 4 to 19 feet at the borings. The rock generally consisted of medium soft to medium hard sandstone and shale overlying an approximate 10-foot to 15-foot thick soft claystone below approximate elevations 1138 to 1135 feet at this building location. Soft to medium soft sandy shale is below the claystone. Much of the rock encountered was very broken to blocky with numerous weathered horizontal to low angle fractures.

Ground Water

Groundwater level measurements are recorded at the tops of the Field Classification sheets in Appendix A and are summarized in Table 1. Based on the measurements, there appears to be a perched water zone in the sandstone strata directly overlying the soft claystone.

Water level measurements have been made in the borings at the times and under the conditions indicated herein. It should be noted, however, that ground water levels may fluctuate due to variations in rainfall, temperature, site grading or other factors not evident at the times these measurements were made. Those preparing design drawings, specifications and construction plans should assume that variations will occur.

Following completion of the drilling program all borings were backfilled with cement grout. The boring locations within the bituminous asphalt parking areas were then topped with asphalt. The soil and rock core samples are being temporarily stored by GAI in Monroeville, PA.

Laboratory Testing

Rock core samples from borings R-3, -4, -5, -6 and -7 were tested to determine rock strength. The results of the testing are summarized in Table 2. The actual test results are presented in Appendix B.

Ten rock samples were tested for unconfined compressive strength. The strength testing was performed by Geotechnics of East Pittsburgh, PA. Five of the rock core samples were tested accordance with ASTM D2938. Due to the smaller size of core available, three of the rock samples were tested using a Point Load tester (ASTM D5731). Due to the soft nature of two of the claystone samples, they were tested in general accordance with ASTM D2166, Unconfined Compressive Strength of Cohesive Soil. The results indicate the medium soft to medium hard sandstone or sandy shale have unconfined compressive strengths ranging from 500 to 14,000 psi, with the lower values being associated with more weathered rock. The soft claystone had unconfined compressive strengths ranging from 9 to 1225 psi. Previous testing for the parking garage indicated the medium soft and harder shale and other rocks below the claystone unit to have an unconfined compressive strength between 700 and 3,000 psi.

Conclusions and Recommendations

Subsurface Stabilization

The presence of abandoned mines in the Pittsburgh coal below the location of the proposed structure poses a risk of future subsidence damage to the new structure. GAI is not aware of available records that would document the complete previous grouting of the area below the proposed building. If such documentation is available from hospital site records, they should be provided to GAI for evaluation. Assuming there are none, GAI recommends that the coal seam and any fractured rock above be filled with cement grout in advance of foundation construction to substantially reduce the risk of future coal-mine induced subsidence. The subsurface stabilization program should be aimed at detecting the presence of any significant voids in the rock and filling them with cement grout. If voids are not found, the program will serve to verify that there are no significant voids are present that would result in subsidence damage. GAI should prepare the plans and specifications for stabilization of the mined seam within the zone of influence of the new structure.

Spread Footings

Spread footing foundations should be feasible for support of the new structure after the foundations of the existing structures have been removed and the recommended subsurface stabilization has been completed. The new foundations should bear on very stiff natural soils, decomposed rock, or rock. The foundations should be designed for a maximum allowable gross bearing pressure of 2 tons per square foot (TSF) when bearing on very stiff natural soil, decomposed rock, or rock. The very stiff natural soil or decomposed rock was found at depths of 3 feet to 6 feet in most borings, 9 feet in boring R-9, and at 18 feet in boring R-1 (see Table 1).

If additional capacity is needed, the allowable bearing pressure can be increased to 3 TSF where foundations bear directly on rock above elevation 1143 feet (see Table 1 for top of rock elevations). If a spread footing bears on rock below elevation 1143 feet, the design bearing pressure will be governed by the soft claystone layer present across the site, and should be limited to 2 TSF.

The recommended allowable design gross bearing pressures are for the combined effects of dead and frequently applied live loads. The values may be increased by 33 percent of the combined effects of infrequent events. The minimum footing width should be 18 inches. All footings should bear a minimum of three feet below finished grade to limit the effects of frost action. Footings so designed are estimated to settle on the order of ½ to 1 inch. Differential settlements should be gradual and tolerable.

The bases of all footing excavations should be examined be GAI and should be free of loose or soft material, frozen soil, organic materials, or other unsuitable materials and water prior to placing concrete. A concrete mud mat should be considered to protect the subgrade from deterioration, if the concrete for spread footings cannot be placed the same day that the excavation is completed.

Portions of the existing buildings may extend below the anticipated level of the new spread footing foundations. If that occurs, those portions of the existing buildings should be removed to very stiff natural soils or rock and should be replaced with backfill compacted as recommended later in this report.

Drilled Shaft (Caisson) Foundations

It may be determined that drilled shaft foundations are more cost effective to support columns in portions of this structure with lower spread footing elevations (because of the reduced allowable design bearing pressures of footings within the zone of influence of the soft claystone layer, or to reduce excavation bracing costs). Drilled pier foundations socketed into the medium soft rock below about elevation 1124 are recommended. Drilled shaft foundations should be a minimum of 30 inches in diameter to permit entry for cleaning and verification of appropriate rock in the socket. The minimum rock socket depth should be one diameter below the base of the soft claystone layer (which has a base elevation of about 1124 feet). An allowable design bearing pressure of 8 TSF may be used. In addition, an allowable design rock socket side shear bond capacity of 25 PSI (pounds per square inch) may be assigned for medium soft rock and 50 PSI may be assigned for medium hard or harder rock. The relatively low side shear capacity of the soft claystone should be neglected. For example, a 5-foot diameter shaft extending 10 feet into medium soft rock would have a design capacity of 565 kips in side shear and 314 kips in end bearing, for a total capacity of 879 kips. The design concrete slump for dry excavations should be 5 to 7 inches. Drilled shaft foundations should be designed and constructed according to the current version of the ACI committee report "Design and Construction of Drilled Piers," ACI 336.3R.

Floor Slabs

After the remnants of the existing buildings have been removed and replaced with well compacted backfill to finished subgrade for the floor slabs, the floor slabs in the base of the building should be underlain by at least six inches of inert, durable, hard PennDOT Type A aggregate and a vapor barrier. If it is desirable to maintain a dry floor to the extent practical, then the aggregate should have an AASHTO No. 57 gradation and supplemental perforated drain pipes should be provided in low areas for drainage of any water that accumulates below the slab. The underdrain system should be provided with a gravity drain or other means of removal of water from the area. (Note that a moisture barrier will not totally prevent slab moisture or possible mold.)

Excavations and Retaining Walls

A portion of the new building will have a basement extending one story below the finished first floor elevation. The design of the basement retaining walls should be based on the following criteria. The basement walls will be a non-yielding and should therefore be based on the "at rest" lateral earth pressure coefficient, K_o. The backfill around the walls may be assigned a K_o = 0.5. Natural soil may be assigned a moist unit weight = 135 PCF. If AASHTO #57 aggregate is used for backfill in the entire active zone in soil and below the top of rock, then the design soil unit weight may be reduced to 100 PCF. The effects of surcharges must be included in design. Passive resistance at the toe of the wall may be computed based on a passive earth pressure coefficient, K_p, = 2.5, where the material below the wall will remain permanently. Sliding resistance along the base of the wall footing may be designed based on a coefficient of friction of 0.4, if the concrete bears on very stiff cohesive soil or rock. Sufficient drainage capacity should be provided around the basement walls to prevent the rise of ground water following precipitation events.

Existing buildings north and east of the proposed building will remain during construction of the new buildings. The design of the excavations adjacent to the existing buildings must prevent excessive movement of the supporting materials and foundations below the existing building. Similar comments apply where excavations may be adjacent to existing roadways that must be maintained in an active condition during construction.

The excavation for the basement may penetrate a medium soft to medium hard sandstone or shale layer over a soft claystone layer. The results of unconfined compression tests of samples of the rock are presented in Table 1 and Appendix B. The prospective contractors should view the core samples before determining means and methods of excavating these materials to limit construction vibrations to tolerable values. Blasting should not be used to assist in excavation. Pre- and post-construction surveys of surrounding facilities should be performed to determine if construction related damage occurs.

If temporary excavation bracing is needed in site soils with horizontal ground above and below the bracing, it should be designed based on an active lateral earth pressure coefficient of 0.4, a passive lateral earth pressure coefficient of 2.5 and a soil moist unit weight of 135 PCF. The effects of surcharges must be included in the design.

Side slopes of temporary open cut excavations should be in accordance with OSHA criteria.

Backfill Compaction

Backfill may be placed below the lowest floor slab, around basement walls or under pavements. The remnants of the existing buildings and their ancillary facilities should be removed to very stiff natural soils or better support materials, before placing backfill to support new facilities. Unsuitable materials, water, frozen soil, loose soil, soft soil, organic materials, slag, coal, and pyritic strata should be removed prior to placing fill or backfill. The entire subgrade should be proof-rolled where space permits with five passes of a 10-ton rubber-tired roller. Any soft or loose soils encountered should be overexcavated and replaced with well-compacted backfill.

Cohesive soils (where acceptable) should be placed and compacted in loose lifts no greater than 8 inches in thickness. Compaction should be accomplished using a segmented wheeled or a sheepsfoot roller. Where smaller compaction equipment must be used, the lift thicknesses should be reduced as needed to achieve the recommended degree of compaction. Cohesive backfill should not be placed within the zone of influence of retaining walls. Granular soils should be placed in loose lift thicknesses not exceeding 8 inches and compacted with a vibratory roller or plate compactor.

The maximum particle size for each material type should not exceed 2/3 the loose lift thickness. Cohesive backfill should be compacted to 100 percent of the maximum dry density according to ASTM Test Designation D698. Granular backfill that does not exhibit a moisture-density relationship should be compacted to 60% relative density according to ASTM Test Designations D4253 and D4254.

The unit weight and water content of soils should be corrected for soils containing oversized particles according to ASTM Test Designation D4718. Slag or pyritic materials which are potentially expansive should not be used as fill or backfill. Heavy compaction equipment should not be run beside retaining

walls during backfilling because they may apply unacceptably high lateral earth pressures on the wall due to soil compaction.

Design Review

This report has been prepared to aid Astorino in the geotechnical design for this project. Its scope is limited to the specific project and location described herein and represents our understanding of the significant aspects relative to soil and foundation considerations. If there are differences in the locations of the proposed facilities and/or design features from those described herein, GAI should be informed so we may, if necessary, modify or revise our recommendations and determine if additional exploration, testing and analyses are warranted prior to final design of the facilities. GAI should be permitted to review and provide inputs to retaining wall, and foundation construction plans and specifications before they are final. GAI should prepare the subsurface stabilization plan and specifications. GAI should monitor at the site any additional exploration, subgrade preparation, subsurface stabilization, earthwork construction, retaining wall construction, and foundation construction so that these aspects of the project are constructed according to the intent of our recommendations and so that any unanticipated foundation conditions might be recognized and properly reconciled.

Respectfully submitted,
GAI Consultants, Inc.

Samuel G. Mazzella, PE
Project Engineer

F. Barry Newman, PE
Project Manager

SGM/FBN/eac

Tables

GAI CONSULTANTS, INC.

TABLE 1

SUMMARY OF DATA from the TEST BORING PROGRAM

Proposed Research Office Building

Veterans Administration Hospital: Oakland Campus, Pittsburgh

Boring Number	Ground Surface Elevation (MSL) (Feet)	Soil Depth (Feet)	Top of Rock Elev. (Feet)	Depth to Very Stiff Nat Soil (Feet)	Elevation Top of Very Stiff Nat Soil (Feet)	Top of Sandstone Elevation (Feet)	Bot. of SS & Top of CS Elevation (Feet)	Bot. of CS Layer Elevation (Feet)	0 hr GWL (Feet)	0 hr Groundwater Elevation (Feet)	24 hr + Groundwater Elevation (Feet)
R-1	1159.7	19.2	1140.5	18	1141.7	1140.5	1134.7	1124.7	22.9	1136.8	#N/A
R-2	1159.7	9.1	1150.6	6	1153.7	1150.6	1134.7	#N/A	15.0	1144.7	1151.7
R-3	1159.6	6.3	1153.3	6	1153.6	1145.4	1138.2	1124.1	3.7	1155.9	1150.2
R-4	1159.0	4.3	1154.7	3	1156.0	1140.0	1136.0	#N/A	9.1	1149.9	1140.9
R-5	1160.1	6.8	1153.3	3	1157.1	1148.1	1135.1	#N/A	4.4	1155.7	1139.7
R-6	1160.2	9.6	1150.6	3	1157.2	1140.2	1134.3	#N/A	9.3	1150.9	1144.9
R-7	1160.1	6.4	1153.7	3	1157.1	1146.2	1135.7	#N/A	4.6	1155.5	1139.8
R-8	1158.8	15.8	1143.0	3	1155.8	1138.8	1135.3	#N/A	13.6	1145.2	1133.6
R-9	1160.0	15.5	1144.5	9	1151.0	1144.5	1138.0	1127.6	22.2	1137.8	#N/A

GAI CONSULTANTS, INC.

TABLE 2

SUMMARY OF ROCK UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS
Proposed Research Office Building
Veterans Administration Hospital: Oakland Campus, Pittsburgh

Boring	Depth (ft)	Visual Classification of Rock Samples	Rock Unconfined Compression Strength (psi)	Unit Wet Weight (PCF)	ASTM Test Method
R-3	16.0-16.4	M. hard brown SANDSTONE	6,820		D 2938
R-3	18.4-18.8	M. hard brown SANDSTONE	9,360		D 2938
R-4	6.3-6.5	M. soft brown SANDY SHALE	2,768[1]		D 5731
R-4	13.9-14.2	M. soft brown SANDY SHALE	1,768[1]		D 5731
R-5	8.7-9.5	M. soft brown SANDY SHALE	480		D 2938
R-5	14.2-14.7	M. soft to m. hard brown-gray SANDSTONE	5,830		D 2938
R-5	30.2-30.7	Soft gray CLAYSTONE	9	136	D 2166
R-6	25.4-25.9	M. hard gray SANDSTONE	14,010		D 2938
R-6	28.0-28.6	Soft gray CLAYSTONE	16	138	D 2166
R-7	38.4-38.8	M. soft CLAYSTONE	1,225[1]		D 5731

Notes:
[1] Estimated based on point load test
[2] Testing Conducted by Geotechnics

Figures

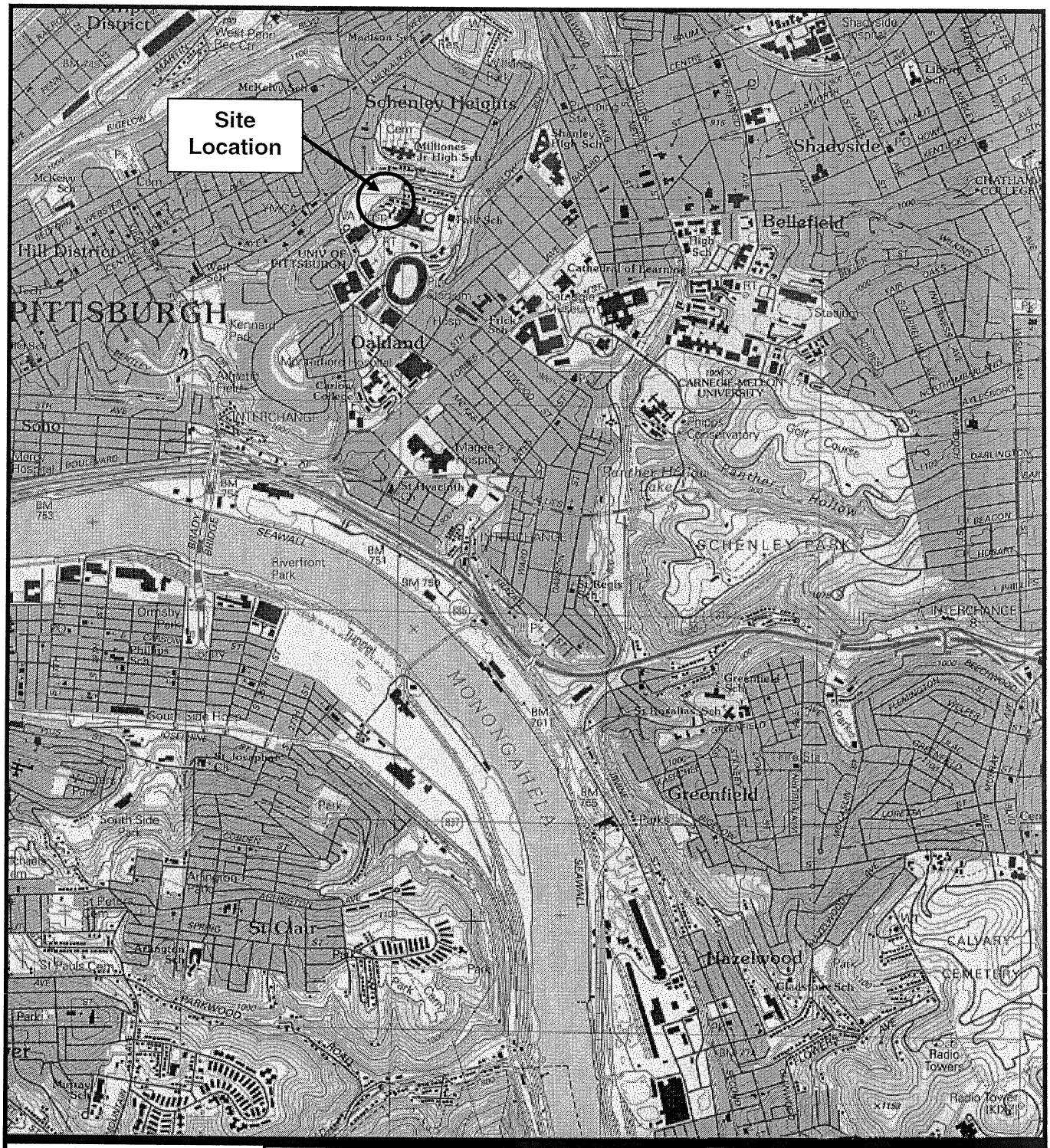


FIGURE 1

SITE LOCATION MAP

Veterans Administration Hospital

Proposed Research Office Building

Oakland Campus, Pittsburgh

GAI Consultants, Inc.
C060465
December 2006

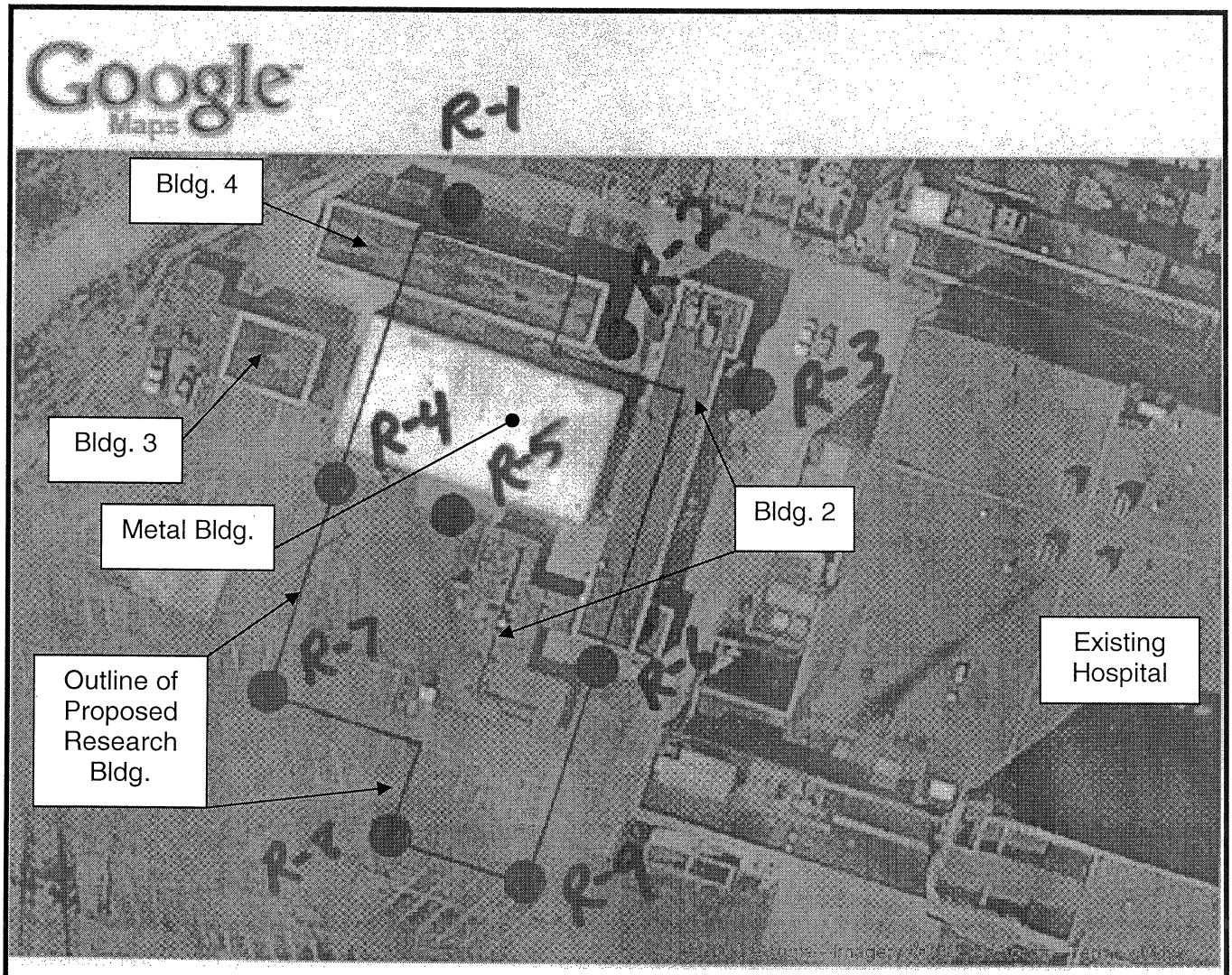


FIGURE 2

APPROXIMATE LOCATION OF

NEW BUILDING

Veterans Administration Hospital

Proposed Research Office Building

Oakland Campus, Pittsburgh

GAI Consultants, Inc.
C060465
December 2006

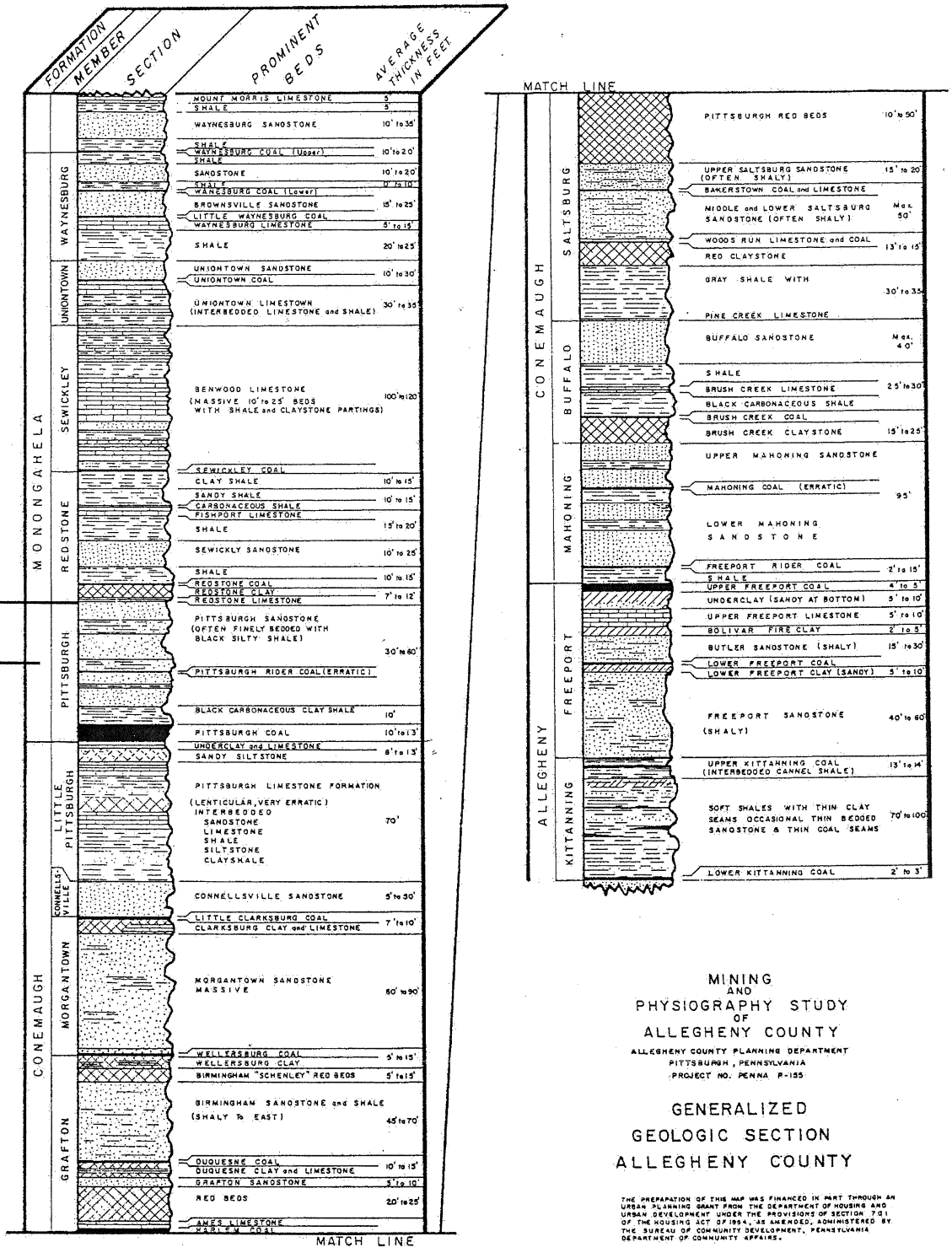


FIGURE 3

GENERALIZED GEOLOGIC SECTION

Veterans Administration Hospital

Proposed Research Office Building

Oakland Campus, Pittsburgh

GAI Consultants, Inc.
C060465
December 2006

Appendix A
Field Classification Sheets of Borings

gai consultants
transforming ideas into reality

SOILS

DENSITY OF GRANULAR SOILS BASED ON STANDARD PENETRATION RESISTANCE

DESIGNATION	STANDARD PENETRATION RESISTANCE (BLOWS/FOOT)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

CONSISTENCY OF COHESIVE SOILS IS BASED ON FIELD AND/OR LABORATORY TESTS

CONSISTENCY	UNC COMPRESSIVE STR. (TONS PER SQUARE FOOT)	FIELD IDENTIFICATION
VERY SOFT	LESS THAN 0.25	EASILY PENETRATED SEVERAL INCHES BY FIST
SOFT	0.25 TO 0.50	EASILY PENETRATED SEVERAL INCHES BY THUMB
MEDIUM STIFF	0.50 TO 1.0	CAN BE PENETRATED SEVERAL INCHES BY THUMB WITH MODERATE EFFORT
STIFF	1.0 TO 2.0	READILY INDENTED BY THUMB BUT PENETRATED ONLY WITH GREAT EFFORT
VERY STIFF	2.0 TO 4.0	READILY INDENTED BY THUMBNAIL
HARD	MORE THAN 4.0	INDENTED WITH DIFFICULT BY THUMBNAIL

ADDITIONAL TERMS USED IN THE DESCRIPTION OF SOILS:

AND	INDICATES APPROXIMATELY EQUAL AMOUNTS OF MATERIALS, SUCH AS A SAND AND GRAVEL MIXTURE. IF THE MATERIALS OCCUR IN THIN SEPARATE SEAMS, IT IS NOTED IN THE DETAILED WORD CLASSIFICATION. THE THICKNESS IS GIVEN WHERE POSSIBLE.
SOME	INDICATES A SIGNIFICANT AMOUNT OF THE ACCESSORY MATERIAL. EXAMPLE: MEDIUM DENSE SILTY SAND - SOME GRAVEL
TRACE	INDICATES A MINOR AMOUNT OF THE ACCESSORY MATERIAL EXAMPLE: LOOSE SILTY SAND - TRACE OF GRAVEL
INTERBEDDED	USED TO DESCRIBE THIN ALTERNATING SEAMS. THICKNESS IS GIVEN WHERE POSSIBLE EXAMPLE: HARD INTERBEDDED SILT AND CLAY (APPROXIMATELY 1/16" THICK)

ROCK

TERM	DEFINITION
SEAM	THIN (12 INCHES OR LESS) PROBABLY CONTINUOUS LAYER
SOME	INDICATES SIGNIFICANT (15 TO 40 PERCENT) AMOUNTS OF THE ACCESSORY MATERIAL EXAMPLE: ROCK COMPOSED OF SANDSTONE (70%) AND SEAMS OF SHALE (30%) WOULD BE: SANDSTONE - SOME SHALE SEAMS
FEW	INDICATES: MINOR (0-15 PERCENT) AMOUNTS OF THE ACCESSORY MATERIAL EXAMPLE: ROCK COMPOSED OF SANDSTONE (90%) AND SEAMS OF SHALE (10%) WOULD BE: SANDSTONE - FEW SHALE SEAMS
INTERBEDDED	USED TO INDICATE THIN OR VERY THIN ALTERNATING SEAMS OF MATERIAL OCCURRING IN APPROXIMATELY EQUAL AMOUNTS EXAMPLE: ROCK COMPOSED OF SANDSTONE (50%) AND SHALE (50%) SEAMS WOULD BE INTERBEDDED SANDSTONE AND SHALE.

THE DEGREE OF BROKENNESS OF THE ROCK IS DESCRIBED BY ONE OF THE FOLLOWING TERMS:

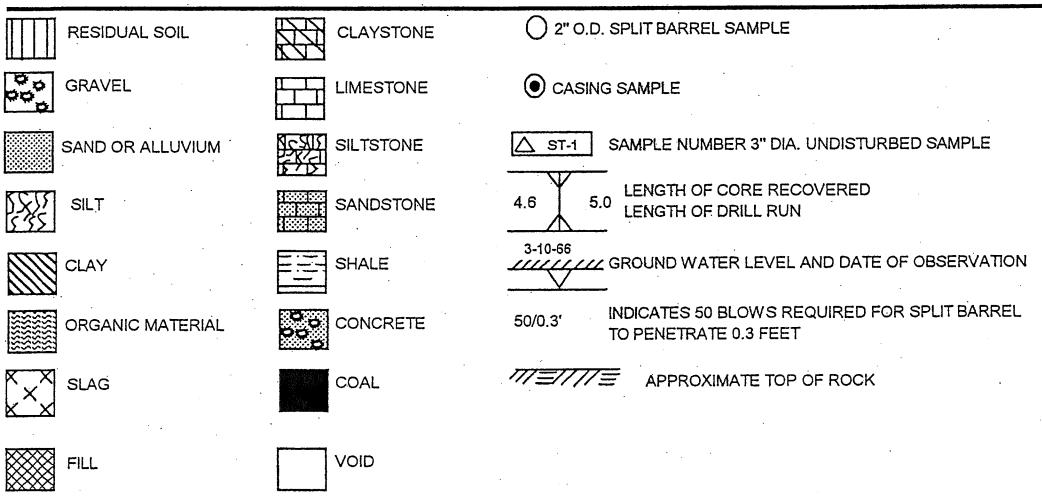
DESCRIPTIVE TERMS	ABBREVIATION	SPACING
VERY BROKEN	(V. BR.)	LESS THAN 2 INCHES
BROKEN	(BR.)	2 INCHES - 1 FOOT
BLOCKY	(BL.)	1 FOOT - 3 FEET
MASSIVE	(M.)	3 FEET - 10 FEET

RQD-ROCK QUALITY DESIGNATION IS CUMULATIVE LENGTH OF PIECES OF CORE EQUAL TO OR GREATER THAN FOUR INCHES IN LENGTH DIVIDED BY THE TOTAL LENGTH OF CORE RUN, EXPRESSED AS A PERCENTAGE.

THE FOLLOWING BASIC NAMES ARE APPLIED TO SEDIMENTARY ROCK:

ROCK TYPE	CHARACTERISTICS
SANDSTONE	MADE UP PREDOMINANTLY OF GRANULAR MATERIALS RANGING BETWEEN 1/16 AND 2MM IN DIAMETER
SILTSTONE	MADE UP OF GRANULAR MATERIALS LESS THAN 1/16 MM IN DIAMETER. FRACTURES IRREGULARLY, MEDIUM THICK TO THICK BEDDED
CLAYSTONE	VERY FINE GRAINED ROCK MADE UP OF CLAY MATERIALS. FRACTURES IRREGULARLY, VERY SMOOTH TO TOUCH. GENERALLY HAS IRREGULARLY SPACED PITTING ON SURFACE OF DRILLED CORES.
SHALE	A FISSILE VERY FINE GRAINED ROCK. FRACTURES ALONG BEDDING PLANES
LIMESTONE	ROCK MADE UP PREDOMINANTLY OF CALCITES (CA CO3) EFFERVESCES UPON THE APPLICATION OF HYDROCHLORIC ACID
COAL	ROCK CONSISTING MAINLY OF ORGANIC REMAINS

LEGEND



gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-1

ELEVATION 1159.7 GWL 0 HRS 22.9 — PROJECT NO 0060465

HRS

DATE 11/6/06 — CLASSIFIED BY L A Newman — PAGE 1 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	2 3 4	S-1			loose	BRN	clay and rock fragments (Fill)	GC	dry (sandstone)
3.0									
	2 3 3	S-2			soft	BRN	sandy clay, some rock fragments, trace slag (Fill)	GC	moist *0.5 TSF
6.0									
	2 2 3	S-3			Loose	BRN	sandstone boulder (Fill)		poor recovery, pushed through boulder
9.0									
	3 2 2	S-4			m. stiff	BRN	sandy clay, some rock fragments	GC	*0.5-0.75 TSF dry
12.0									
	2 2 3	S-5			stiff				*1.0-2.0 TSF, dry
15.0									
	3 3 4	S-6							
18.0				18.0					Top of rock @ 19.2'
	8 50/.2	S-7		19.2	v stiff	BRN	Decomposed sandstone		
20.0									
	4.4 5.0	R-1 88	14		m. hard	BRN	sandstone, trace sandy shale seams	VBR BR	horizontal to low angle fractures
25.0				25.0					
	5.0 5.0	R-2 100	72		soft	Gray	claystone	VBR OL	low to high angle fractures
30.0									

REMARKS** CME 45 drill rig, NQII Coring tools, 3¼" ID h.s.a. automatic hammer
PA Drill Co. Driller - Bill Minor Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-1

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-1

ELEVATION 1159.7 GWL 0 HRS 22.9 — PROJECT NO C060465

HRS

DATE 11/6/06 — CLASSIFIED BY LA Newman — PAGE 2 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	0.7/5.0	R-3 14	0		soft	gray	claystone (cont.)	V BR	high angle fractures
35.0				35.0					
	2.3/2.5	R-4 92	0		soft to m soft	Gray	sandy shale, trace claystone seams	V BR / BR	low to high angle fractures
37.5									
	2.4/2.5	R-5 96	24						
40.0				40.0					
							Bottom of boring @ 40.0'		

REMARKS ** CME 45 drill rig, NQ II Coring Tools, 3¼" ID h.s.a., automatic hammer, PA Drill Co. Driller – Bill Minor Helper Craig Hicks

BORING R-1

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

gai consultants
transforming ideas into reality

PROJECT VA Hospital Research Office Building — BORING NO. R-2

ELEVATION 1159.7 GWL 0 HRS 15.0 — PROJECT NO C060465

24 HRS 8.0

DATE 11/7/06 — CLASSIFIED BY L A Newman — PAGE 1 of 1

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	4 5 7	S-1			m dense	BRN	sandy clay some rock fragments	GC	#2.0 TSF, dry
3.0									
	32 22 12	S-2			dense				
6.0				6.0					
	9 14 30	S-3			VSt-Hd	BRN	decomposed sandstone		no water added for coring
9.0				9.1			Top of rock @ 9.1'		
10.0	50/0.1						/// ≡ /// ≡		
	4.8/5.0	R-1 96	0		m soft m hard	BRN Lt Gray	sandstone some sandy shale seams	VBR BR	Horizontal to low angle fractures
15.0									
	5.0/5.0	R-2 100	18						
20.0									
	3.0/5.0	R-3 60	30						
25.0				25.0					
	2.1/2.5	R-4 84	20		soft m soft	Gray	claystone	VBR BR	Low to high angle fractures
27.5									
	1.5/2.5	R-5 60	0						
30.0							Bottom of boring @ 30.0'		

REMARKS** CME 45 drill rig, NQ II coring tools, 3¼" ID h.s.a., automatic hammer
PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

BORING R-2

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building BORING NO. R-3

ELEVATION 1159.6 GWL 0 HRS 3.7 PROJECT NO C060465

24 HRS 9.4

DATE 11/8/06 CLASSIFIED BY LA Newman PAGE 1 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY		RQD (%) OR TORVANE	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3		4	5	6	7	8	9	10
	3 5 4	S-1				loose	BRN	sandy clay some rock fragments, trace slag (Fill)	GC	moist
3.0										
	19 12 9	S-2				m dense				dry
6.0					6.0					Top of rock @ 6.3'
6.3	50/0.3	S-3			6.3	v dense	BRN	silty clay some rock fragments	GC	
	4.2 / 4.2	R-1	100	21		m soft to hard	BRN	interbedded sandy shale and sandstone	VBR to BR	Horizontal to low angle fractures
10.5										
	5.0 / 5.0	R-2	100	6						
					14.2					
15.5						m hard	BRN	sandstone, trace m soft sandy shale seams	VBR to BR	Horizontal to low angle fractures
	5.0 / 5.0	R-3	100	42						
20.5										
	4.5 / 5.0	R-4	90	32	21.4	soft	Gray	Limestone seam @ 20.5'-20.7' Claystone	VBR to BR	Low to high angle fractures
25.5										
	5.0 / 5.0	R-5	100	20						

REMARKS ** CME 45 drill rig, NQII coring tools, 3¼" ID h.s.a., automatic hammer, PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-3

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-3

ELEVATION 1159.6 GWL 0 HRS 3.7 — PROJECT NO C060465

24 HRS 9.4

DATE 11/8/06 CLASSIFIED BY L A Newman — PAGE 2 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
30.5					↑	↑	↑	↑	↑
	4.8/5.0	R-6 96	74		soft	gray	claystone (cont)	V BR to BR	Low to high angle fractures
35.5				35.5	↓	↓	↓	↓	↓
	5.0/5.0	R-7 100	0		m soft	gray	sandy shale	V BR to BR	Horizontal to low angle fractures
40.5									
	5.0/5.0	R-8 100	62						
45.5									
	5.0/5.0	R-9 100	8						
50.5									
	5.0/5.0	R-10 100	0						
55.5				55.5	↓	↓	Bottom of boring @ 55.5'	↓	↓

REMARKS** CME 45 drill rig, NQ11 coring tools, 3¼" ID h.s.a., automatic hammer, PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-3

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-4

ELEVATION 1159.0 GWL 0 HRS 9.1 — PROJECT NO C0604165

24 HRS 18.1

DATE 11/9/06 — CLASSIFIED BY LA Newman — PAGE 1 of 1

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
1.0							Asphalt surface		
	3 12 26	S-1			V stiff	Gray	sandy clay, some rock fragments	GC	*2.0-3.0 TSF
3.0				3.0					dry
	4 30 50/3	S-2			V stiff	BRN	Decomposed sandy shale		dry
				4.3			Top of rock @ 4.3'		
5.5							/// ≡ /// ≡		
	5.0/5.0	R-1 100	0		m soft	BRN	sandy shale	V BR to BR	horizontal to low angle fractures
10.5									
	5.0/5.0	R-2 100	0						
15.5									
	6.0/5.0	R-3 100	12						
				19.0					
					m. hard	BRN	sandstone	V BR to BR	low to high angle fractures
20.5									
	2.0/2.5	R-4 88	32						
23.0				23.0					
	2.5/2.5	R-5 100	32		soft	Gray	claystone	V BR to BR	low to high angle fractures
25.5									
	4.0/4.5	R-6 97	53						
30.0							Bottom of boring @ 30.0'		

REMARKS** CME 45 drill rig, NQ II coring tools, 3¼" ID h.s.a., automatic hammer, PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-4

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-5

ELEVATION 1160.1 GWL 0 HRS 4.4 — PROJECT NO C060465

72 HRS 20.4

DATE 11/9/06-11/10/06 CLASSIFIED BY L.A. Newman — PAGE 1 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
1.0							Asphalt surface		
	5 6 22	S-1			v stiff	BRN	Decomposed sandy shale		dry
3.0									
	28 34 41	S-2							
6.0									
6.8	42 50/3	S-3		6.8			Top of rock @ 6.8'		
	3.3/3.3	R-1	100 33		m soft	BRN	sandy shale	V BR to BR	Horizontal to low angle fractures
10.0									
	5.0/5.0	R-2	100 20	12.0					
					m soft to m hard	BRN to Gray	sandstone, some m. soft shale seams	BR	Horizontal to low angle fractures
15.0									
	4.9/5.0	R-3	98 0					V BR do BR	
20.0									
	5.0/5.0	R-4	100 20	22.3					
					m soft	Gray	sandy shale	BR	Horizontal to low angle fractures
25.0				25.0					
	1.6/2.5	R-5	64 0		soft	Gray	claystone	V BR do BR	Low to high angle fractures
27.5									
	2.0/2.5	R-6	80 0						
30.0									

REMARKS ** CME 45 drill rig, NQ II coring tools 3¼" ID h.s.a., automatic hammer, PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-5

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building BORING NO. R-5

ELEVATION 1160.1 GWL 0 HRS 4.4 PROJECT NO C060465

72 HRS 20.4

DATE 11/10/06 CLASSIFIED BY LA Newman PAGE 2 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	4.9/5.0	R-7 11/98	68		soft	gray	claystone (cont)	VBR to BL	low to high angle fractures
35.0									
	4.9/5.6	R-8 11/98	54						
40.0				40.0			Bottom of boring @ 40.0'		

REMARKS** CME 45 drill rig NQ II coring tools, 3¼" ID h.s.a. automatic hammer, PA Drill Co. Driller - Bill Minor Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-5

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-6

ELEVATION 1160.2 GWL 0 HRS 9.3 — PROJECT NO C060465

24 HRS 15.3

DATE 11/10/06-11/13/06 CLASSIFIED BY LA Newman — PAGE 1 of 1

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	2 3 3	S-1			V Stiff	BRN	sandy clay, some rock fragments	GC	moist *2.5-3.0 TSF
3.0									↓
	4 5 5	S-2							*2.5-3.0 TSF, dry
6.0				6.0	↓	↓	↓	↓	↓
	6 7 8	S-3			V stiff	BRN	decomposed sandy shale		dry
9.0					↓	↓	↓		↓
10.0	41 50/0.1	S-4		9.6			Top of rock @ 9.6'		
	5.0/5.0	R-1 100	32		M Soft to M hard	BRN to Gray	Interbedded sandstone and sandy shale	VBR to BR	Horizontal to low angle fractures
15.0					↓	↓	↓	↓	↓
	4.8/5.0	R-2 96	0						
20.0				20.0	↓	↓	↓	↓	↓
	4.6/5.0	R-3 92	34		M hard	Gray	sandstone	VBR to GR	Horizontal to low angle fractures
25.0					↓	↓	↓	↓	↓
	5.0/5.0	R-4 100	44	25.9					
					Soft	Gray	claystone	VBR to BR	Low to high angle fractures
30.0				30.0	↓	↓	Bottom of boring @ 30.0'	↓	↓

REMARKS** CME 45 drill rig, NQ II coring tools, 3 1/4" ID h.s.a., automatic hammer
PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-6

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-7

ELEVATION 1160.1 GWL 0 HRS 4.6 — PROJECT NO C060465

24 HRS 20.3

DATE 1/13/06 — CLASSIFIED BY L A Newman — PAGE 1 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
1.0							Asphalt surface		
	10 39 50	S-1			v stiff	BRN	Decomposed sandy shale		dry
3.0									
	31 50/4	S-2		3.9					
					v stiff	BRN	Highly weathered sandy shale		
6.0									
6.4	50/4	S-3		6.4					T.O.R @ 6.4'
	4.0/4.6	R-1 87	0		m soft	BRN	sandy shale	VBR to BR	horizontal to low angle fractures
10.0									
	5.0/5.0	R-2 100	0						
				13.9					
15.0					m hard	BRN-Gray	Sandstone, some m. soft sandy shale seams	VBR to BR	horizontal to low angle fractures
	5.0/5.0	R-3 100	8						
20.0									
	5.0/5.0	R-4 100	52						
				24.4					
25.0					soft	Gray	Claystone	VBR to BR	low to high angle fractures
	5.0/5.0	R-5 100	76						
30.0									

REMARKS ** CME 45 drill rig NQ II coring tools, 3¼" ID h.s.a., automatic hammer
PA Drill Co. Driller - Bill Minor Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-7

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-7

ELEVATION 1160.1 GWL 0 HRS 4.6 — PROJECT NO C060465

24 HRS 20.3

DATE 11/17/06 CLASSIFIED BY L A Newman — PAGE 2 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	4.2/5.0	R-6 84	30		m soft	Gray	Claystone (cont)	VBR 00	low to high angle fractures
								BR	
35.0									
	4.7/5.0	R-7 94	34						
40.0				400			Bottom of boring @ 40.0'		

REMARKS ** CME 45 drill rig, NQ II coring tools, 3¼" ID h.s.a., automatic hammer
PA Drill Co. Driller - Bill Miner Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-7

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-8

ELEVATION 1158.8 GWL 0 HRS 13.6 — PROJECT NO C060465

2.4 HRS 25.2

DATE 11/14/06 CLASSIFIED BY L A Newman — PAGE 1 of 1

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
1.0							Asphalt surface		
	2 4 13	S-1		2.2	v stiff	BRN	silty clay trace rock fragments	GC	*2.5-2.0 TSF, moist
3.0					v stiff	BRN	decomposed sandy shale		dry
	7 9 14	S-2							
6.0									
	10 17 15	S-3							
9.0									
	2 5 10	S-4							
12.0									
	15 31 48	S-5							
15.0							Top of rock @ 15.8'		
15.8	49 50/0.3	S-6		15.8					
	3.5/4.2	R-1 83	12		mv soft to hard	BRN-Gray	interbedded sandstone and sandy shale	V BR to BR	low to high angle fractures
20.0				20.0					
	5.0/5.0	R-2 100	56		m hard	Gray	sandstone	V BR to BR	low to high angle fractures
				23.5					
					soft	Gray	claystone	V BR to BR	low to high angle fractures
25.0									
	4.9/5.0	R-3 98	48						
30.0				30.0			Bottom of boring @ 30.0		

REMARKS** CME 45 drill rig, 3¼" ID h.s.a., NQ-II coring tools, automatic hammer, PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-8

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-9

ELEVATION 1160.0 GWL 0 HRS 22.2 — PROJECT NO L060465

HRS

DATE 11/15/06 CLASSIFIED BY L A Newman — PAGE 1 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
1.0							Asphalt surface		
	4 2 2	S-1			v loose	Blk			wet
3.0									
	2 2 3	S-2			v stiff	BRN	sandy clay some rock fragments	GC	dry *3.0-3.5 TSF
6.0									
	1 2 4	S-3			m stiff	BRN	silty clay, trace rock fragments	GC	wet *0.5-1.0 TSF
9.0									
	7 13 14	S-4			v stiff	BRN	Decomposed sandy shale		dry
12.0									
	6 31 50	S-5							
15.0							Top of rock @ 15.5'		
15.5	50 5/0.0	S-6							
	4.4/4.5	R-1	90	22	m hard	Gray-BRN	Sandstone, some m soft sandy shale seams	VBR BR	Horizontal to high angle fractures
20.0									
	2.5/2.5	R-2	100	36					
22.0									
22.5					soft	Gray	claystone	VBR BL	low to high angle fractures
	2.2/2.5	R-3	88	100					
25.0									
	4.8/5.0	R-4	96	22					
30.0									

REMARKS** CME 45 drill rig NQ-11 coring tools, 3¼" ID h.s.a., automatic hammer, PA Drill Co. Driller - Bill Minor Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-9

gai consultants
transforming ideas into reality

PROJECT VA Research Office Building — BORING NO. R-9

ELEVATION 1160.0 GWL 0 HRS 22.2 — PROJECT NO C060465

HRS

DATE 11/15/06 — CLASSIFIED BY L A Newman — PAGE 2 of 2

DEPTH (FT.)	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%) OR TORVANE	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY - CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	5.0/5.0	R-5 100	52		soft	Gray	claystone (cont)	VBR to BR	horizontal to low angle fractures
				32.4					
					m soft	Gray	sandy shale, trace m hard sandstone. seams	VBR to BR	horizontal to low angle fractures
35.0									
	5.0/5.0	R-6 100	42						
40.0				40.0			Bottom of boring @ 40.0'		

REMARKS** CME 45 drill rig, NQ-II coring tools, 3¼" ID h.s.a., automatic hammer, PA Drill Co. Driller - Bill Minor, Helper - Craig Hicks

* POCKET PENETROMETER READINGS

** METHOD OF ADVANCING AND CLEANING BORING

BORING R-9

Appendix B
Unconfined Compressive Strength Test Results

Geotechnics
INTEGRITY IN TESTING

UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS

ASTM D 2938-95

CLIENT: GAI CONSULTANTS, INC.
CLIENT PROJ: VA RESEARCH OFFICE BLDG. C060465.00
PROJECT NO.: 2006-435-01
LAB ID NO.: 2006-435-01-01

BORING I.D.: R-3
DEPTH(ft): 16.0 - 16.4
SAMPLE ID: NA

DESCRIPTION: 2" ROCK CORE

SPECIMEN LENGTH (in.)
BEFORE CAPPING

READING 1:	4.04
READING 2:	4.04
READING 3:	4.05
AVERAGE:	**4.04**

SPECIMEN LENGTH (in.)
AFTER CAPPING

READING 1:	4.06
READING 2:	4.07
READING 3:	4.07
AVERAGE:	**4.07**

SPECIMEN DIAMETER(in.):

READING 1:	1.98
READING 2:	1.98
AVERAGE:	**1.98**
AREA(in^2):	3.08
L/D:	2.06
TOTAL LOAD(lbs)	20,990
COMPRESSIVE STRENGTH (PSI):	**6,820**

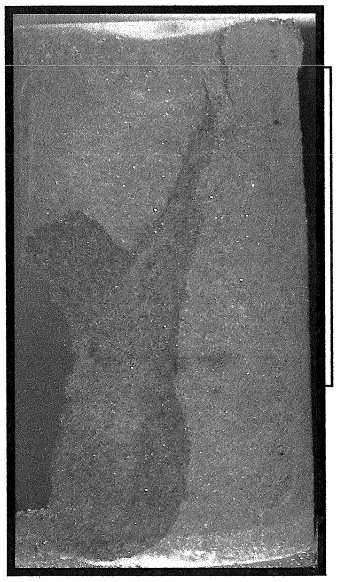
FRACTURE TYPE: **CONE & SHEAR**

RATE OF LOADING(lbs/sec):	99
TIME TO BREAK(min:sec:100^{th}):	3:33:09

DEVIATION FROM STRAIGHTNESS[4]:
AXIAL: *Pass* TOP: *Pass* BOTTOM: *Pass*

NOTES:

2) Moisture conditions at time of test are as received.
3) Specimens capped with cement/plaster paste.
4) Deviation from straightness, Procedure A of ASTM D 4543.
Pass/Fail criteria: gap < 0.02 = Pass, gap > 0.02 = Fail



Tested By: *CK* Date: *12/1/06* Checked By TM Date 12-1-06

N:\Unconfine\Rock Cores\GAI\GAI VA RESEARCH OFFICE BLDG\[2006-435-01-01.xls]UCRock_E

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

geotechnics
INTEGRITY IN TESTING

UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS

ASTM D 2938-86

CLIENT: GAI CONSULTANTS, INC.
CLIENT PROJ: VA RESEARCH OFFICE BLDG. C060465.00
PROJECT NO.: 2006-435-01
LAB ID NO.: 2006-435-01-02

BORING I.D.: R-3
DEPTH(ft): 18.4 - 18.8
SAMPLE ID: NA

DESCRIPTION: 2" ROCK CORE

SPECIMEN LENGTH (in.) BEFORE CAPPING

READING 1:	3.62
READING 2:	3.61
READING 3:	3.62
AVERAGE:	**3.62**

SPECIMEN LENGTH (in.) AFTER CAPPING

READING 1:	3.64
READING 2:	3.65
READING 3:	3.65
AVERAGE:	**3.64**

SPECIMEN DIAMETER(in.):

READING 1:	1.97
READING 2:	1.98
AVERAGE:	**1.98**
AREA(in^2):	3.07
L/D:	1.84
TOTAL LOAD(lbs)	28,755
COMPRESSIVE STRENGTH (PSI):	**9,360**
CORRECTION (PSI)[1]:	9,270
FRACTURE TYPE:	**CONE**
RATE OF LOADING(lbs/sec):	110
TIME TO BREAK(min:sec:100^{th}):	4:20:79

DEVIATION FROM STRAIGHTNESS[4]: AXIAL: *Pass* TOP: *Pass* BOTTOM: *Pass*

NOTES: 1) Corrected PSI value for L/D, as per ASTM D 2938-86.
2) Moisture conditions at time of test are as received.
3) Specimens capped with cement/plaster paste.
4) Deviation from straightness, Procedure A of ASTM D 4543.
Pass/Fail criteria: gap < 0.02 = Pass, gap > 0.02 = Fail

Tested By: *CK* Date: *12/1/06* Checked By TM Date 12-1-06

DCN: CT45; Revision No.:5; Revision Date:01/27/04

N:\Unconfine\Rock Cores\GAI\GAI VA RESEARCH OFFICE BLDG\[2006-435-01-02.xls]UCRock_E

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

POINT LOAD TEST

ASTM D5731-02 (SOP S-46)

geotechnics
INTEGRITY IN TESTING

Client	GAI Consultants, Inc.	Boring No.	R-4
Client Reference	VA Research Office Bldg C060465.00	Depth (ft)	6.3-6.5
Project No.	2006-435-01	Sample No.	NA
Lab ID	2006-435-01-03	Description	2" BROWN ROCK CORE

Sample Dimensions

Sample Height Measurements, (D)	
Height, 1(in.)	1.624
Height, 2(in.)	1.577
Height, 3(in.) (*Test Contact Point*)	1.457
Average Height, (in.)	1.553
D . **Av** D_e . Ave. Equiv. Core Diam., (mm)	39.44
Sample Length Measurements, (W)	
Length, 1 (in.)	2.001
Length, 2 (in.)	1.991
Length, 3 (in.)	2.010
Average Length, (in.)	2.001
Length/Diameter Ratio (D/W)	0.776

Moisture Content

Tare No.	3549
Wt. of Tare + Wet Rock (gm.)	126.10
Wt. of Tare +Dry Rock (gm.)	119.86
Wt of Tare (gm.)	6.78
Moisture Content	***5.5***
Sample Length Measurements, (L)	
Length, 1 (in.)	1.000
Length, 2 (in.)	1.000
Length, 3 (in.)	1.000
Average Length, (in.)	1.000
Length/Diameter Ratio(L/D)	0.644

Test Data

Piston Area (in^2)	2.236
P - Gauge Pressure @ Failure (lbf)	580

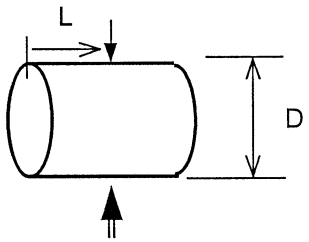
Index & Strength Computations

I_S - Point Load Index (psi)	**146.7**
$I_{S(50)}$. Corrected Point Load Index (psi)	**131.8**
C - Index To Strength Conversion Factor	**21.0**
δ_{vx} - **Est.Unconfined Compressive Strength (psi)**	**2,768**

Recommended Sample Dimensions for Each Test Type

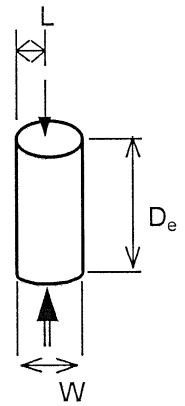
..... Orientation of bedding planes or planes of weakness.

L/D > 1.00
L > 0.5D



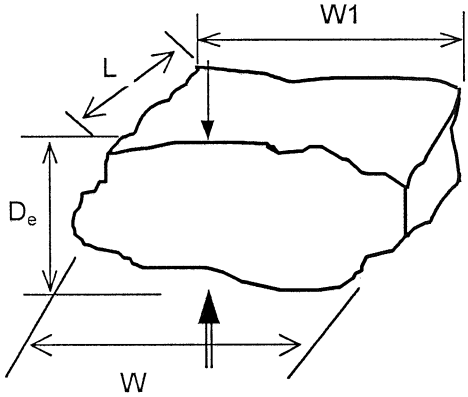
Diametral Test

D/W = 0.33 to 1.00
L > 0.5D - Block



Axial or Block Test

D ≃ 50 mm(~2 in)
D/W = 0.33 to 1.00
L > 0.5D



Lump Test

Tested By DDA *Date* 12/1/06 *Checked By* KVB *Date* 12-4-06

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

POINT LOAD TEST

ASTM D5731-02 (SOP S-46)

geotechnics INTEGRITY IN TESTING

Client	GAI Consultants, Inc.	Boring No.	R-4
Client Reference	VA Research Office Bldg C060465.00	Depth (ft)	13.9-14.2
Project No.	2006-435-01	Sample No.	NA
Lab ID	2006-435-01-04	Description	2" BROWN ROCK CORE

Sample Dimensions

Sample Height Measurements, (D)	
Height, 1(in.)	1.916
Height, 2(in.)	2.012
Height, 3(in.) (*Test Contact Point*)	1.850
Average Height, (in.)	1.926
D - Av D_e - Ave. Equiv. Core Diam., (mm)	48.92
Sample Length Measurements, (W)	
Length, 1 (in.)	2.028
Length, 2 (in.)	2.023
Length, 3 (in.)	2.010
Average Length, (in.)	2.020
Length/Diameter Ratio (D/W)	0.953

Moisture Content

Tare No.	3578
Wt. of Tare + Wet Rock (gm.)	198.44
Wt. of Tare +Dry Rock (gm.)	191.08
Wt of Tare (gm.)	6.71
Moisture Content	***4.0***
Sample Length Measurements, (L)	
Length, 1 (in.)	1.010
Length, 2 (in.)	1.010
Length, 3 (in.)	1.010
Average Length, (in.)	1.010
Length/Diameter Ratio(L/D)	0.524

Test Data

Piston Area (in^2)	2.236
P - Gauge Pressure @ Failure (lbf)	390

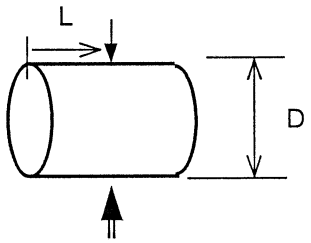
Index & Strength Computations

I_S - Point Load Index (psi)	**78.7**
$I_{S(50)}$ - Corrected Point Load Index (psi)	**77.9**
C - Index To Strength Conversion Factor	**22.7**
δ_{UC} - **Est.Unconfined Compressive Strength (psi)**	**1,768**

Recommended Sample Dimensions for Each Test Type

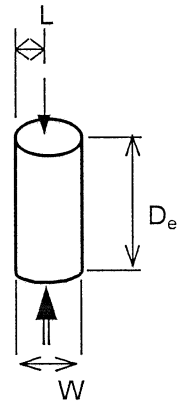
..... Orientation of bedding planes or planes of weakness.

L/D > 1.00
L > 0.5D



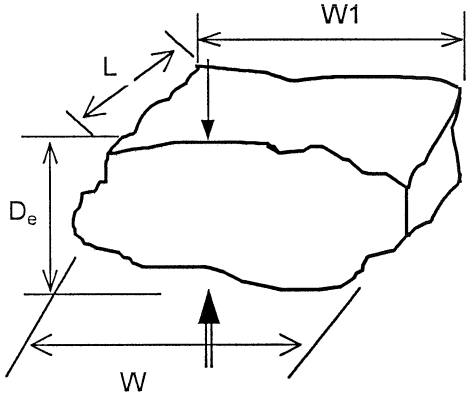
Diametral Test

D/W = 0.33 to 1.00
L > 0.5D - Block



Axial or Block Test

D ≃ 50 mm(~2 in)
D/W = 0.33 to 1.00
L > 0.5D



Lump Test

Tested By DDA *Date* 12/1/06 *Checked By* KB *Date* 12-4-06

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

geotechnics
INTEGRITY IN TESTING

UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS

ASTM D 2938-95

CLIENT: GAI CONSULTANTS, INC.
CLIENT PROJ: VA RESEARCH OFFICE BLDG. C060465.00
PROJECT NO.: 2006-435-01
LAB ID NO.: 2006-435-01-05

BORING I.D.: R-5
DEPTH(ft): 8.7 - 9.5
SAMPLE ID: NA

DESCRIPTION: 2" ROCK CORE

SPECIMEN LENGTH (in.) BEFORE CAPPING

READING 1:	4.07
READING 2:	4.07
READING 3:	4.05
AVERAGE:	**4.06**

SPECIMEN LENGTH (in.) AFTER CAPPING

READING 1:	4.15
READING 2:	4.15
READING 3:	4.14
AVERAGE:	**4.14**

SPECIMEN DIAMETER(in.):

READING 1:	1.98
READING 2:	1.96
AVERAGE:	**1.97**
AREA(in^2):	3.06
L/D:	2.10
TOTAL LOAD(lbs)	1,460
COMPRESSIVE STRENGTH (PSI):	**480**

FRACTURE TYPE: **CRUMBLED**

RATE OF LOADING(lbs/sec): 19
TIME TO BREAK(min:sec:100^{th}): 1:17:52
DEVIATION FROM STRAIGHTNESS[4]:
AXIAL: *Fail* TOP: *Pass* BOTTOM: *Pass*

NOTES:

2) Moisture conditions at time of test are as received.
3) Specimens capped with cement/plaster paste.
4) Deviation from straightness, Procedure A of ASTM D 4543.
Pass/Fail criteria: gap < 0.02 = Pass, gap > 0.02 = Fail

NO PHOTO

SAMPLE CRUMBLED

Tested By: *CK* Date: *12/1/06* Checked By JM Date 12-1-06

DCN: CT45; Revision No.:5; Revision Date:01/27/04

N:\Unconfine\Rock Cores\GAI\GAI VA RESEARCH OFFICE BLDG\[2006-435-01-05.xls]UCRock_E

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS

ASTM D 2938-95

CLIENT:	GAI CONSULTANTS, INC.	BORING I.D.:	R-5
CLIENT PROJ:	VA RESEARCH OFFICE BLDG. C060465.00	DEPTH(ft):	14.2 - 14.7
PROJECT NO.:	2006-435-01	SAMPLE ID:	NA
LAB ID NO.:	2006-435-01-06		

DESCRIPTION: 2" ROCK CORE

SPECIMEN LENGTH (in.) BEFORE CAPPING

READING 1:	4.05
READING 2:	4.03
READING 3:	4.06
AVERAGE:	**4.04**

SPECIMEN LENGTH (in.) AFTER CAPPING

READING 1:	4.09
READING 2:	4.10
READING 3:	4.10
AVERAGE:	**4.10**

SPECIMEN DIAMETER(in.):

READING 1:	1.98
READING 2:	1.98
AVERAGE:	**1.98**
AREA(in^2):	3.08
L/D:	2.07
TOTAL LOAD(lbs)	17,935
COMPRESSIVE STRENGTH (PSI):	**5,830**

FRACTURE TYPE: **SHEAR**

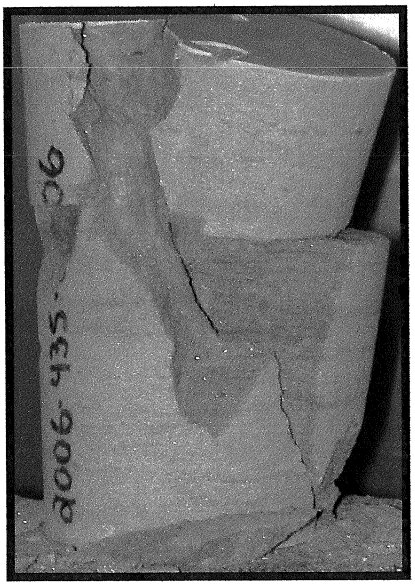
RATE OF LOADING(lbs/sec):	113
TIME TO BREAK(min:sec:100^{th}):	2:38:10

DEVIATION FROM STRAIGHTNESS[4]:

AXIAL: *Pass* TOP: *Pass* BOTTOM: *Pass*

NOTES:

2) Moisture conditions at time of test are as received.
3) Specimens capped with cement/plaster paste.
4) Deviation from straightness, Procedure A of ASTM D 4543.
Pass/Fail criteria: gap < 0.02 = Pass, gap > 0.02 = Fail



Tested By: *CK* Date: *12/1/06* Checked By TM Date 12-1-06

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

UNCONFINED COMPRESSIVE STRENGTH

ASTM D2166-00 / AASHTO T208-96 (Modified-Peak Load Only) (SOP S-30)

geotechnics
INTEGRITY IN TESTING

Client	GAI Consultants, Inc.	Boring No.	R-5
Client Reference	VA Research Office Bldg C060465	Depth (ft.)	30.2-30.7
Project No.	2006-435-01	Sample No.	NA
Lab ID	2006-435-01-07	Visual Description:	2" DARK GRAY ROCK CORE

INITIAL SAMPLE DIMENSIONS

Length 1(in)	4.228	Top Dia. (in)	2.054
Length 2(in)	4.217	Mid. Dia. (in)	2.043
Length 3(in)	4.156	Bot. Dia. (in)	2.061
Avg.Length(in	4.200	Area (in.^2)	3.309

WATER CONTENT AFTER TEST

Tare No.	1000
Wt. Tare + WS.(gms)	419.11
Wt. Tare + DS.(gms)	367.84
Wt. of Tare(gms)	6.64
% Moisture	14.19

UNIT WEIGHT

Wt. Tube & WS.(gms.)	495.3	Sample Volume(cc.)	227.8
Wt. Of Tube(gms.)	0.00	Unit Wet Wt.(gms/cc)	2.17
Wt. Of WS.(gms.)	495.3	Unit Wet Wt.(pcf.)	135.69
Diameter (in.)	2.05	Moisture Content, %	14.19
Length (in.)	4.20	Unit Dry Wt.(pcf.)	118.82
Length (cm.)	10.67		

LOAD (lbs)	*STRESS (psi)*
29	8.76

Tested By CK Date 12/1/06 Input Checked By MB Date 12-4-06

DCN: CT-S30A Date: 8/07/03 Revision: 3 E:\Unconfine\UCPEAK\GAI-VA RESEARCH OFFICE BLDG\[2006-435-01-07.xls]Sheet1

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

geotechnics
INTEGRITY IN TESTING

UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS

ASTM D 2938-95

CLIENT: GAI CONSULTANTS, INC.
CLIENT PROJ: VA RESEARCH OFFICE BLDG. C060465.00
PROJECT NO.: 2006-435-01
LAB ID NO.: 2006-435-01-08

BORING I.D.: R-6
DEPTH(ft): 25.4 - 25.9
SAMPLE ID: NA

DESCRIPTION: 2" ROCK CORE

SPECIMEN LENGTH (in.)
BEFORE CAPPING

READING 1:	4.12
READING 2:	4.13
READING 3:	4.13
AVERAGE:	**4.13**

SPECIMEN LENGTH (in.)
AFTER CAPPING

READING 1:	4.16
READING 2:	4.18
READING 3:	4.17
AVERAGE:	**4.17**

SPECIMEN DIAMETER(in.):

READING 1:	1.99
READING 2:	1.99
AVERAGE:	**1.99**
AREA(in^2):	3.09
L/D:	2.10
TOTAL LOAD(lbs)	43,355
COMPRESSIVE STRENGTH (PSI):	**14,010**

FRACTURE TYPE: **CONE & SHEAR**

RATE OF LOADING(lbs/sec): 117
TIME TO BREAK(min:sec:100^{th}): 6:12:09
DEVIATION FROM STRAIGHTNESS[4]:
AXIAL: *Pass* TOP: *Pass* BOTTOM: *Pass*

NOTES:

2) Moisture conditions at time of test are as received.
3) Specimens capped with cement/plaster paste.
4) Deviation from straightness, Procedure A of ASTM D 4543.
Pass/Fail criteria: gap < 0.02 = Pass, gap > 0.02 = Fail

Tested By: *CK* Date: *12/1/06* Checked By TM Date 12-1-06

DCN: CT45; Revision No.:5; Revision Date:01/27/04

N:\Unconfine\Rock Cores\GAI\GAI VA RESEARCH OFFICE BLDG\[2006-435-01-08.xls]UCRock_E

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

UNCONFINED COMPRESSIVE STRENGTH

ASTM D2166-00 / AASHTO T208-96 (Modified-Peak Load Only) (SOP S-30)

geotechnics
INTEGRITY IN TESTING

Client	GAI Consultants, Inc.	Boring No.	R-6
Client Reference	VA Research Office Bldg C060465	Depth (ft.)	28.0-28.6
Project No.	2006-435-01	Sample No.	NA
Lab ID	2006-435-01-09	Visual Description:	2" DARK GRAY ROCK CORE

INITIAL SAMPLE DIMENSIONS

Length 1(in)	3.903	Top Dia. (in)	2.059
Length 2(in)	3.905	Mid. Dia. (in)	2.050
Length 3(in)	3.922	Bot. Dia. (in)	2.057
Avg.Length(in	3.910	Area (in.^2)	3.318

WATER CONTENT AFTER TEST

Tare No.	3567
Wt. Tare + WS.(gms)	476.33
Wt. Tare + DS.(gms)	423.20
Wt. of Tare(gms)	6.88
% Moisture	12.76

UNIT WEIGHT

Wt. Tube & WS.(gms.)	469.5	Sample Volume(cc.)	212.6
Wt. Of Tube(gms.)	0.00	Unit Wet Wt.(gms/cc)	2.21
Wt. Of WS.(gms.)	469.5	Unit Wet Wt.(pcf.)	137.81
Diameter (in.)	2.06	Moisture Content, %	12.76
Length (in.)	3.91	Unit Dry Wt.(pcf.)	122.22
Length (cm.)	9.93		

LOAD (lbs)	*STRESS (psi)*
52	15.67

Tested By CK Date 12/1/06 Input Checked By KB Date 12-4-06

DCN: CT-S30A Date: 8/07/03 Revision: 3
E:\Unconfine\UCPEAK\GAI-VA RESEARCH OFFICE BLDG\[2006-435-01-09.xls]Sheet1
544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

POINT LOAD TEST

ASTM D5731-02 (SOP S-46)

geotechnics
INTEGRITY IN TESTING

Client	GAI Consultants, Inc.	Boring No.	R-7
Client Reference	VA Research Office Bldg C060465.00	Depth (ft)	38.4-38.8
Project No.	2006-435-01	Sample No.	NA
Lab ID	2006-435-01-10	Description	2" BROWN ROCK CORE

Sample Dimensions

Sample Height Measurements, (D)	
Height, 1(in.)	1.593
Height, 2(in.)	1.454
Height, 3(in.) (*Test Contact Point*)	1.417
Average Height, (in.)	1.488
D - **Av** D_e - Ave. Equiv. Core Diam., (mm)	37.80
Sample Length Measurements, (W)	
Length, 1 (in.)	1.957
Length, 2 (in.)	1.975
Length, 3 (in.)	1.969
Average Length, (in.)	1.967
Length/Diameter Ratio (D/W)	0.757

Moisture Content

Tare No.	3588
Wt. of Tare + Wet Rock (gm.)	140.39
Wt. of Tare +Dry Rock (gm.)	132.27
Wt of Tare (gm.)	6.81
Moisture Content	***6.5***
Sample Length Measurements, (L)	
Length, 1 (in.)	0.984
Length, 2 (in.)	0.984
Length, 3 (in.)	0.984
Average Length, (in.)	0.984
Length/Diameter Ratio(L/D)	0.661

Test Data

Piston Area (in^2)	2.236
P - Gauge Pressure @ Failure (lbf)	250

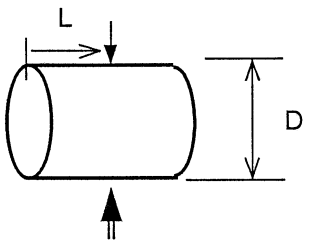
Index & Strength Computations

I_S - Point Load Index (psi)	**67.1**
$I_{S(50)}$ - Corrected Point Load Index (psi)	**59.2**
C - Index To Strength Conversion Factor	**20.7**
δ_{vx} - **Est.Unconfined Compressive Strength (psi)**	**1,225**

Recommended Sample Dimensions for Each Test Type

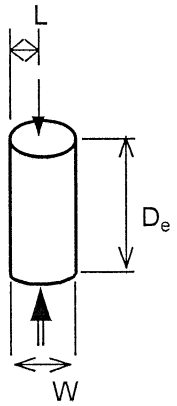
..... Orientation of bedding planes or planes of weakness.

L/D > 1.00
L > 0.5D



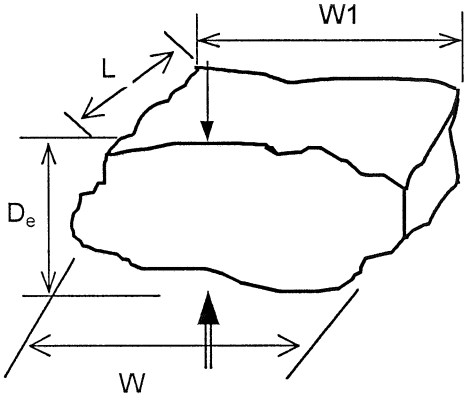
Diametral Test

D/W = 0.33 to 1.00
L > 0.5D - Block



Axial or Block Test

D ≃ 50 mm(~2 in)
D/W = 0.33 to 1.00
L > 0.5D

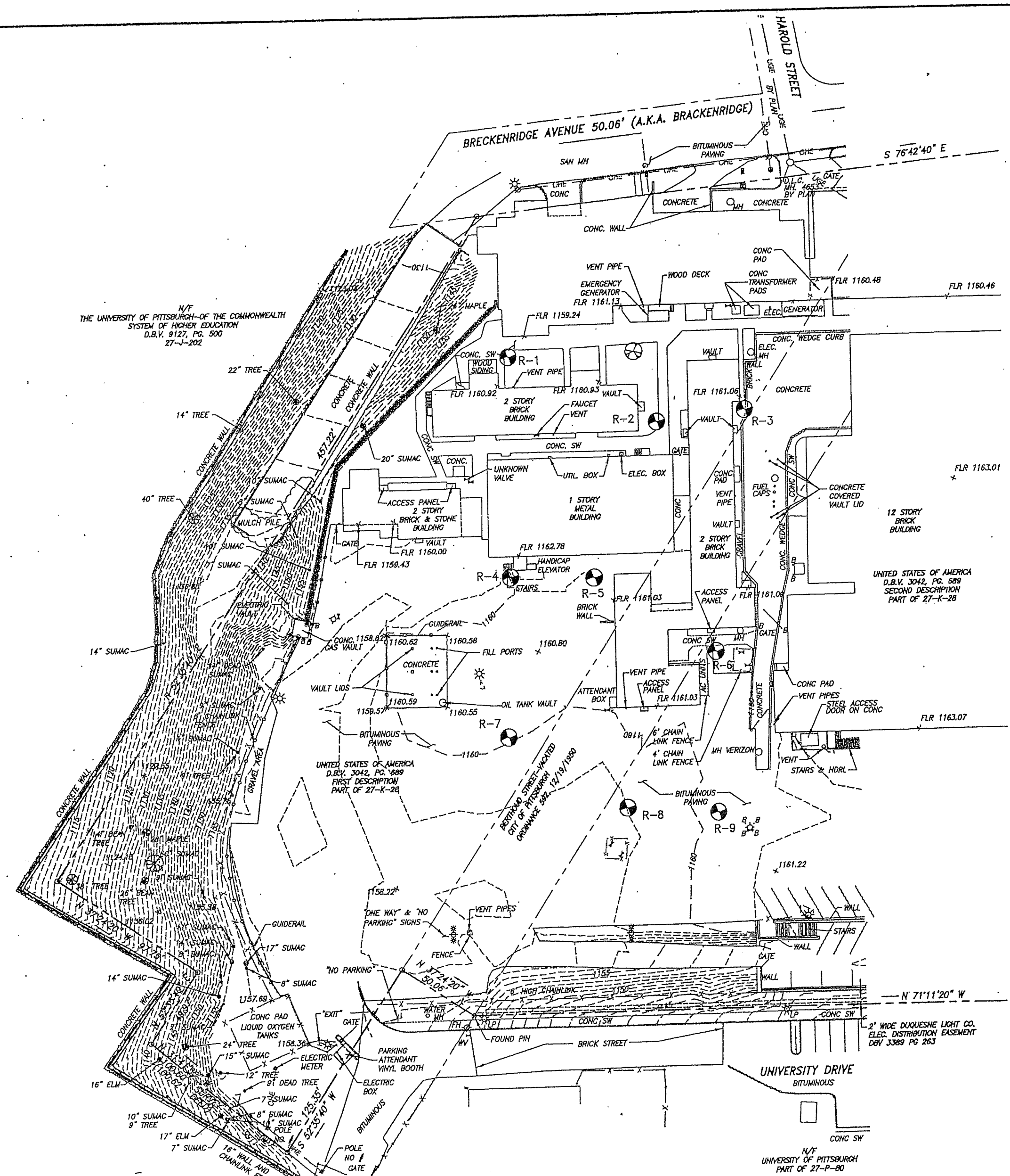


Lump Test

Tested By DDA *Date* 12/1/06 *Checked By* KLB *Date* 12-4-06

544 Braddock Avenue • East Pittsburgh, PA 15112 • 412-823-7600 • FAX 412-823-8999 • www.geotechnics.net

DRAWINGS



LEGEND:

EX PROPERTY LINE	
EX. RIGHT OF WAY LINE	
EX. EASEMENT	
EX. CONTOURS	900
EX. GAS LINE	G
EX. UNDERGROUND ELECTRIC LINE	UGE
EX. AERIAL ELECTRIC/TELEPHONE/CABLE TV	OHE
EX. SANITARY SEWER (BY PLAN)	SAN
EX. SANITARY SEWER (FIELD)	SAN
EX. WATERLINE BY PLAN	W
EX. FIRE HYDRANT	
EX. FENCE	x—x—x
EX. BOLLARD/POST	•B
EX. SIGN	
EX. LIGHT POLE	
EX. UTILITY POLE	
EX. GUY ANCHOR/WIRE	
EX. GAS VALVE	
EX. TREES	
EX. WATER VALVE	
EX. GAS METER	

ABBREVIATIONS:

MH	MANHOLE
ELEC.	ELECTRIC
CONC.	CONCRETE
SW	SIDEWALK
UTIL.	UTILITY
D.B.V.	DEED BOOK VOLUME
PG.	PAGE
N/F	NOW OR FORMERLY
HDRL	HANDRAIL
DIA	DIAMETER
STL.	STEEL
PL.	PLASTIC
EQ.	EQUITABLE GAS COMPANY
D.P.	DOMINION PEOPLES GAS
C.O.P.	CITY OF PITTSBURGH
CPP	CORRUGATED PLASTIC PIPE
RCP	REINFORCED CONCRETE PIPE
VC	VITRIFIED CLAY
BOT	BOTTOM OF CURB
TC	TOP OF CURB
FLR	FLOOR ELEVATION

NOTES:

1) THIS PLAN SHOWS THE APPROXIMATE LOCATIONS OF BORINGS FOR THE NEW RESEARCH OFFICE BUILDING.

2)DO NOT USE THIS PLAN FOR ANY OTHER INFORMATION.

SCALE: 1" = 30'

30' 0 30' 60'

This drawing was produced with computer aided drafting technology and is supported by electronic drawing files. Do not revise this drawing via manual drafting methods.

REVISIONS

NO.	DATE	DWN	CHKD	APPVD	DESCRIPTION

SCALE:	1"=30'
DATE:	12/07/06
DRAWN:	DJP
CHECKED:	MAM
APPROVED:	GER

BORING LOCATION PLAN
PROPOSED RESEARCH OFFICE BUILDING
4th & 5th WARDS, CITY OF PITTSBURGH
ALLEGHENY COUNTY, PENNSYLVANIA

ASTORINO
227 FORT PITT BOULEVARD
PITTSBURGH, PA 15222

gai consultants
PITTSBURGH OFFICE
385 EAST WATERFRONT DRIVE
HOMESTEAD, PA 15120-5005
412-476-2000

PROJECT NO./DASH NO.	2006-465-00
TASK NO. 02	DRAWING NO. D-E002
SHEET 1 OF 1	

CLIENT DRAWING NO.

GAI CAD FILE NO. 2006-465-00-02-D-E002.DWG

SECTION 01 00 00
GENERAL REQUIREMENTS

1.1 GENERAL INTENTION

A. Contractor shall completely prepare site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for VA Pittsburgh Healthcare System, University Drive division, CARES Consolidation Phase 2, Research Office Building #30 as required by drawings and specifications.

B. Visits to the site by Bidders may be made only by appointment with the Resident Engineer's Office (412-360-6239).

C. Office of **Astorino, 227 Fort Pitt Boulevard, Pittsburgh, PA 15222** as Architect Engineers, will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.

D. Before placement and installation of work subject to tests by testing laboratory retained by Contractor, the Contractor shall submit to the Resident Engineer their weekly testing schedule four days in advance.

E. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access.

F. Prior to commencing work, general contractor shall provide proof that an OSHA certified "competent person" (CP) (29 CFR 1926.20(b) (2) will maintain a presence at the work site whenever the general or subcontractors are present.

G. Training:

1. All employees of general contractor or subcontractors shall have the 10-hour or 30-hour OSHA certified Construction Safety course and/or other relevant competency training, as determined by the RE.
2. Submit training records of all such employees for approval before the start of work or before the employee arrives on site.

1.2 STATEMENT OF BID ITEM(S)

A. ITEM I,GENERAL CONSTRUCTION: Work includes general construction, alterations, site work, site utilities, roads, walks, grading, drainage,

mechanical and electrical work, utility systems, elevators, roof top helipad and the necessary removal of existing structures, abatement and construction and certain other items.

B. BASE BID:

1. Contractor shall furnish labor and materials, equipment, transportation, supervision, coordination and services required to perform and complete the work required by drawings and specifications for the CARES Consolidation Projects, Research Office Building work at the VA Pittsburgh Health Care System, University Drive Division, University Drive C, Pittsburgh, PA 15240-1005. The work will consist of one partial mechanical basement level, three stories of offices (two floors of offices and open areas and one floor of office and mechanical room), and one rooftop helipad. A bridge connecting the helipad by an intermediate patient/service elevator stop and the third floor of the main hospital (Building 1) is part of the work.
2. The Research Office Building is a new facility intended to provide offices and future research spaces for the VA's Research and Development group. It is to be constructed at the VA University Drive site in the Oakland section of Pittsburgh, PA, adjacent to the existing VA hospital.
3. The gross area of the project is 99,358 square feet and is broken down as follows:

Basement mechanical equipment	20,930 S.F.
Ground floor - offices, conference area, open area for future lab	25,206 S.F.
First floor - offices and open area for future lab	25,668 S.F.
Second floor - offices and mechanical equipment room	23,429 S.F.
Third floor bridge	1,958 S.F.
Roof	1,548 S.F.
Total gross area	99,358 S.F.

4. The new building will be connected to the third floor of the existing hospital building by a restricted access bridge.

The base bid work is broken into 4 CLIN items for funding reasons as listed below. Work for these separate items is considered Base Bid work but items

need to be separated out due to the government ability to fund and pay for this work under separate funding streams.

CLIN 001, Work includes general Construction, alterations, Site work, Site utilities, roads, walks grading, drainage, mechanical & electrical work, utility systems, elevators, roof top helipad, and the necessary removal of existing structures, and construction of certain other items, with the exception of the three separate Base bid items listed below.

BASE BID-CLIN 002, ASBESTOS ABATEMENT: Under this work, the Contractor shall provide asbestos abatement as described in specification sections 02 32 11 TRADITIONAL ASBESTOS ABATEMENT, 02 82 13.19 ASBESTOS FLOOR TILE AND MASTIC ABATEMENT and 02 82 13.21 ASBESTOS ROOFING ABATEMENT.

BASE BID-CLIN-003, HAZARDOUS WASTE ABATEMENT: UNDER THIS Work, the Contractor shall provide lead paint abatement as described in specification section 02 83 33.13.

BASE BID-CLIN-004, PHYSICAL SECURITY ITEMS: BLAST RESISTANT WINDOWS, DOOR AND FRAMES AND SITE IMPROVEMENTS: Under this work, the Contractor shall provide construction of walls and windows relating to the physical security of the building as described in specification section 05 40 00 COLD FORMED METAL FRAMING, 08 44 13 GLAZED ALUMINUM CURTAIN, 08 56 53 BLAST RESISTANT WINDOWS, 08 80 00 GLAZING, 11 12 00 PARKING CONTROL EQUIPMENT, 13 34 29 PREFABRICATED GUARD BOOTH and described in drawings CS5-000, CS5-900, SS0-101, AS2-102 and the AS5-100 Series Drawings.

C. ALTERNATE: All alternates for this project are add alternates and are listed below.

Alternate No. 1-CLIN 005, BASEMENT ADDITION: ADD: Under this Alternate, the Contractor shall build an additional basement bay located between columns A-B and 2-12. This addition relocates the fire pump room with the fire equipment with water storage tank and HVAC equipment. The areaway tunnel is revised to be inside the building. Also included are the additional engineering connections required for the equipment relocation. Drawings include GSO-005A, SS1-101A, SS6-101A, AS1-101A, AS5-102A, AS5-117A, MH1-101A, MH2-102A, PL1-100A, PL1-101A, FP1-101A, EL1-101A, EP12-101A

Alternate No. 2-CLIN 006, DEMOUNTABLE PARTITIONS with plug and play power preinstalled in the walls: ADD: Under this Alternate, the Contractor shall provide demountable partitions in lieu of drywall partitions as indicated on drawings AS1-111A, AS1-121A, AS7-150, AS7-151, and AS7-152. Changes in the ceiling required for the installation of

demountable partitions are indicated on drawings AS9-111A, AS9-121A. Demountable partitions are indicated on drawings AS9-111A, AS9-121A. Demountable partitions are also described in specification section 10 22 19.13.

Alternate No. 3-CLIN 007, DIGITAL LIGHTING CONTROLS integrated with window shades: ADD: Under this Alternate, the Contractor shall provide head end quantum lighting control system (based on Lutron systems) that connects to the eco dimming ballast system. Each dimming ballast, occupancy sensor, low voltage switching and shade control are connected, monitored and controlled by the quantum server. See drawing EP7-109 and specification section 26 09 43 NETWORK LIGHTING CONTROLS for additional information.

Alternate No. 4-CLIN 008, REPLACE DECORATIVE LIGHTING FIXTURES: ADD: Change from LOUIS POULSEN OSLO pendants to LOUIS POULSEN PH ARTICHOKE pendants: Under this Alternate, the Contractor shall provide light fixture F19 instead of light fixture F17. See drawings EL1-111, EL1-121, EL1-131 and EP6-101.

Alternate No. 5-CLIN 009, EXTERIOR SIGN: ADD: Under this Alternate, the Contractor shall provide a monumental illuminated informational exterior sign as described in EXTERIOR SIGN DESIGN DEVELOPMENT PROGRAM in the project manual in the signage section. Sign base and conduit provided in base bid.

Alternate No. 6-CLIN 010, INTERIOR SIGNAGE: ADD: Under this Alternate, the Contractor shall provide room identification signs designated by IN.03.01 and secondary room identification signs designated by IN.04.02 on the drawings. Locations of these signs are indicated on drawings AS1-301, AS1-311, AS1-321, AS1-331 and AS1-341. These signs are described in the specifications in section 10 14 00.

Alternate No. 7-CLIN 011, SOUND MASKING SYSTEM: ADD: Under this Alternate, the Contractor shall provide power at a location in the telecom room for sound masking located under the small profile access flooring. Sound masking design and installation shall be by a qualified vendor.

D. PHASING:

1. Phasing of construction operations for the proposed Research Office Building is partially dependent upon the construction operations and schedule for the Mental Health Building and Road Improvements project that are currently underway. Construction staging for this project is planned to take place in the vicinity of the ROB site with the Resident Engineers coordinating the locations.

2. Phase 1: Demolition of existing buildings and asbestos abatement on the ROB site may begin as soon as Mental Health Building construction staging can be moved or is demobilized.

3. Phase 2: Utility relocation and improvements will begin for the ROB site after demolition of existing buildings.

4. Phase 3: Mine grouting can commenced and building foundations.

5. Phase 4: Building Construction.

6. There is minimum construction staging and contractor parking for the ROB available on the ROB site. Contractor staging and material stockpiles will be reviewed and coordinated with the Resident Engineer.

7. There should be minimal disruption to hospital routine during construction of the ROB, since it is detached from the main hospital.
8. There should be minimal disruption to pedestrian and vehicular traffic within the ROB site, because the site is at the rear of the main hospital and most vehicular and pedestrian traffic will be handled by the new parking garage in the front of the hospital.

E. SITE LAYOUT: The ROB project is located in Parking Pot #7 (west of the main VAMC building B#1). There are areas of Lot #7 that are being used by the VA Medical Center for their on-going construction projects. The enclosed sketch (Attachment A) designates the space in the lot.

F. INTERIOR WORK in B#1: work at the bridge connection to the 3FL shall be done during off hours (evenings and/or weekends); tel/data cabling work on the 3FL - 5FL shall be done on off hours (evenings and/or weekends).

1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

A. AFTER AWARD OF CONTRACT, one electronic set of specifications and drawings on CD will be furnished.

1.4 CONSTRUCTION SECURITY REQUIREMENTS

A. Security Plan:

1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations. Drivers licenses for all employees shall be submitted with safety training information.

B. Security Procedures:

1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 days notice to the RE so that arrangements can be made. This notice is separate from any notices required for utility shutdown described later in this section.
3. No photography of VA premises is allowed without written permission of the RE.
4. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national or VAMC emergency. The General Contractor may return to the site only with the written approval of the Resident Engineer.

C. Key Control:
1. The General Contractor shall provide duplicate keys and lock combinations to the Resident Engineer for all locked gates/project doors.

D. Document Control:
1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of "sensitive information".
2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
4. Certain documents, sketches, videos or photographs and drawings may be marked "Law Enforcement Sensitive" or "Sensitive Unclassified". Secure such information in separate containers and limit the access to only those who will need it for the project. Return the information to the Resident Engineer upon request.
5. These security documents shall not be removed or transmitted from the project site without the written approval of Resident Engineer.
6. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
7. Notify the Resident Engineer immediately when there is a loss or compromise of "sensitive information".

1.5 FIRE SAFETY

A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):

E84-2008.....Surface Burning Characteristics of Building Materials

2. National Fire Protection Association (NFPA):

10-2006.....Standard for Portable Fire Extinguishers

30-2007.....Flammable and Combustible Liquids Code

51B-2003.....Standard for Fire Prevention During Welding, Cutting and Other Hot Work

70-2007.....National Electrical Code

241-2004.....Standard for Safeguarding Construction, Alteration, and Demolition Operations

3. Occupational Safety and Health Administration (OSHA):

29 CFR 1926.....Safety and Health Regulations for Construction

B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Resident Engineer for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, etc. Documentation shall be provided to the Resident Engineer that individuals have undergone contractor's safety briefing.

C. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.

D. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).

E. Temporary Construction Partitions:

1. Install and maintain temporary construction partitions to provide 2 hour separations between construction areas and adjoining occupied areas. Construct partitions of gypsum board in accordance with ASTM E84) on both sides of fire retardant treated wood or metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Seal joints and penetrations. At door openings, install 90 minute rated doors if needed.
2. Install two-hour fire-rated temporary construction partitions to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, vertical shafts and openings enclosures.
3. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials in accordance with Section 07 84 00, FIRESTOPPING.

F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.

G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Resident.

H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Resident Engineer.

I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.

J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.

K. Standpipes: Install and extend standpipes up with each floor in accordance with 29 CFR 1926 and NFPA 241. Do not charge wet standpipes subject to freezing until weather protected.

L. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Resident Engineer. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results

of any tests performed shall be recorded by the medical center and copies provided to the Resident Engineer.

N. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Resident Engineer.

O. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate/submit hot work permit to Resident Engineer four hours in advance of work. Designate contractor's responsible project-site fire prevention program manager to permit hot work. Hot work permit forms to be provided by RE.

P. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Resident Engineer.

Q. Smoking: Smoking is **prohibited** within VA buildings at all times. Contractors are permitted to smoke in VAMC staff designated areas only.

R. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.

S. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

T. If required, submit documentation to the Resident Engineer that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.6 OPERATIONS AND STORAGE AREAS

A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

C. The Contractor shall, under regulations prescribed by the Resident Engineer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Resident Engineer. When materials

are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

(FAR 52.236-10)

D. Working space and space available for storing materials shall be as shown and determined by the Resident Engineer.
Working space and space available for storing materials shall be as shown and determined by the Resident Engineer.

E. Workmen are subject to rules of the VA Medical Center.

F. Execute work in such a manner as to interfere as little as possible with work being done by others. Keep roads clear of construction materials, debris, standing construction equipment and vehicles at all times.
Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others. Use of equipment and tools that transmit vibrations and noises through the building structure, are not permitted in buildings that are occupied, during construction, jointly by patients or medical personnel, and Contractor's personnel, except as permitted by Resident Engineer where required by limited working space.
   1. Do not store materials and equipment in other than assigned areas.
   2. Schedule delivery of materials and equipment to immediate construction working areas within buildings in use by Department of Veterans Affairs in quantities sufficient for not more than two work days.

F. Construction Fence: Before construction operations begin, Contractor shall provide a chain link construction fence, 2.1m (seven feet) minimum height, around the construction area indicated on the drawings. Provide gates as required for access with necessary hardware, including hasps and padlocks. Fasten fence fabric to terminal posts with tension bands and to line posts and top and bottom rails with tie wires spaced at maximum 375mm (15 inches). Bottom of fences shall extend to 25mm (one inch) above grade. Remove the fence when directed by Resident Engineer.

G. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment,

connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by Resident Engineer.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of Resident Engineer. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, 27 05 11 REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS and 28 05 11, REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS for additional requirements.
2. Contractor shall submit a request to interrupt any such services to Resident Engineer, in writing, 72 hours in advance of proposed interruption. Request shall state reason, date, exact time of, approximate duration of such interruption and a sketch identifying area.
3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of VA Medical Center. Interruption time approved may occur at other than Contractor's normal working hours.
4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the Resident Engineer.
5. In case of a contract construction emergency, service will be interrupted on approval of Resident Engineer. Such approval will be confirmed in writing as soon as practical.
6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.

H. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged. The lines shall not be capped in finished areas, but shall be removed

and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces. Coordinate with Resident Engineer.

I. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:

1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles. Wherever excavation for new utility lines cross existing roads, at least one lane must be open to traffic at all times (flagman are required for traffic control).
2. Method and scheduling of required cutting, altering and removal of existing roads; walks and entrances must be approved by the Resident Engineer.

J. Coordinate the work for this contract with other construction operations as directed by Resident Engineer. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

1.7 ALTERATIONS

A. Survey: Before any work is started, the Contractor shall make a thorough survey with the Resident Engineer areas of buildings in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by to the Resident Engineer. This report shall list by rooms and spaces:

1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas.
2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.
3. Shall note any discrepancies between drawings and existing conditions at site.
4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and Resident Engineer.

B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of Resident Engineer to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by Contractor with new items in accordance with specifications which will be furnished by Government. Provided the

contract work is changed by reason of this subparagraph B, the contract will be modified accordingly, under provisions of clause entitled "DIFFERING SITE CONDITIONS" (FAR 52.236-2) and "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).

C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and Resident Engineer together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:
   1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.

D. Protection: Provide the following protective measures:
   1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
   2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
   3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

E. Final Cleanup:
   1. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.
   2. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.
   3. All new air ducts shall be cleaned prior to final inspection and new filters installed.

1.8 DISPOSAL AND RETENTION

Not applicable.

1.9 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(FAR 52.236-9)

C. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

D. Refer to FAR clause 52.236-7, "Permits and Responsibilities," which is included in General Conditions. A National Pollutant Discharge Elimination System (NPDES) permit is required for this project. The Contractor is considered an "operator" under the permit and has extensive responsibility for compliance with permit requirements. VA will make the permit application available at the (appropriate medical center) office. The apparent low bidder, contractor and affected subcontractors shall furnish all information and certifications that are required to comply with the permit

process and permit requirements. Many of the permit requirements will be satisfied by completing construction as shown and specified. Some requirements involve the Contractor's method of operations and operations planning and the Contractor is responsible for employing best management practices. The affected activities often include, but are not limited to the following:

- Designating areas for equipment maintenance and repair;
- Providing waste receptacles at convenient locations and provide regular collection of wastes;
- Locating equipment wash down areas on site, and provide appropriate control of wash-waters;
- Providing protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials; and
- Providing adequately maintained sanitary facilities.

1.10 RESTORATION

A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the Resident Engineer. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the Resident Engineer before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.

B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.

C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.

D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract

time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2).

1.11 PHYSICAL DATA

A. Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

1. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by the VA's Architect Engineer.

(FAR 52.236-4)

B. Subsurface conditions have been developed by core borings and test pits. Logs of subsurface exploration are shown diagrammatically on drawings.

C. A copy of the soil report is included in the specification.

D. Government does not guarantee that other materials will not be encountered nor that proportions, conditions or character of several materials will not vary from those indicated by explorations. Bidders are expected to examine site of work and logs of borings; and, after investigation, decide for themselves character of materials and make their bids accordingly. Upon proper application to Department of Veterans Affairs, bidders will be permitted to make subsurface explorations of their own at site.

1.12 PROFESSIONAL SURVEYING SERVICES

A registered professional land surveyor or registered civil engineer whose services are retained and paid for by the Contractor shall perform services specified herein and in other specification sections. The Contractor shall certify that the land surveyor or civil engineer is not one who is a regular employee of the Contractor, and that the land surveyor or civil engineer has no financial interest in this contract.

1.13 LAYOUT OF WORK

A. The Contractor shall lay out the work from established base lines and bench marks, indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at Contractor's own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until

authorized to remove them. If such marks are destroyed by the Contractor or through Contractor's negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

(FAR 52.236-17)

B. Establish and plainly mark center lines for each building and such other lines and grades that are reasonably necessary to properly assure that location, orientation, and elevations established for each such structure, roads, parking lot are in accordance with lines and elevations shown on contract drawings.

C. Following completion of general mass excavation and before any other permanent work is performed, establish and plainly mark (through use of appropriate batter boards or other means) sufficient additional survey control points or system of points as may be necessary to assure proper alignment, orientation, and grade of all major features of work. Survey shall include, but not be limited to, location of lines and grades of footings, exterior walls, center lines of columns in both directions, major utilities and elevations of floor slabs:

1. Such additional survey control points or system of points thus established shall be checked and certified by a registered land surveyor or registered civil engineer. Furnish such certification to the Resident Engineer before any work (such as footings, floor slabs, columns, walls, utilities and other major controlling features) is placed.

D. During progress of work, and particularly as work progresses from floor to floor, Contractor shall have line grades and plumbness of all major form work checked and certified by a registered land surveyor or registered civil engineer as meeting requirements of contract drawings. Furnish such certification to the Resident Engineer before any major items of concrete work are placed. In addition, Contractor shall also furnish to the Resident Engineer certificates from a registered land surveyor or registered civil engineer that the following work is complete in every respect as required by contract drawings.

1. Lines of each building and/or addition.
2. Elevations of bottoms of footings and tops of floors of each building and/or addition.
3. Lines and elevations of sewers and of all outside distribution systems.
4. Lines and elevations of roads, streets and parking lots.

E. Whenever changes from contract drawings are made in line or grading requiring certificates, record such changes on a reproducible drawing bearing the registered land surveyor or registered civil engineer seal, and forward these drawings upon completion of work to Resident Engineer.

F. The Contractor shall perform the surveying and layout work of this and other articles and specifications in accordance with the provisions of Article "Professional Surveying Services".

1.14 AS-BUILT DRAWINGS

A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.

B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the Resident Engineer's review, as often as requested.

C. Contractor shall deliver two approved completed sets of as-built drawings to the Resident Engineer within 15 calendar days after each completed phase and after the acceptance of the project by the Resident Engineer. Both in hard copy and electronically.

D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.15 USE OF ROADWAYS

A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the Resident Engineer, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

B. When new permanent roads are to be a part of this contract, Contractor may construct them immediately for use to facilitate building operations. These roads may be used by all who have business thereon within zone of building operations.

C. When certain buildings (or parts of certain buildings) are required to be completed in advance of general date of completion, all roads leading thereto must be completed and available for use at time set for completion of such buildings or parts thereof.

1.16 RESIDENT ENGINEER'S FIELD OFFICE

A. The Resident Engineers currently use a trailer that has been provided by the UD Consolidation Building #29 contractor. This contractor (ROB #30) shall take over the rental costs associated with the trailer on August 12, 2011. The trailer shall remain in its current location near the VAMC Emergency Entrance.

B. The Contractor shall maintain the following:

1. Electricity, hot and cold water, necessary utility services and tel/data.
2. Thermostatically controlled, centralized heating and air conditioning system designed to maintain the temperature between 21 and 27 degrees C (70 and 80 degrees F) with 50 percent relative humidity maintained during the air conditioning season.

C. Contractor shall, for the duration of the Research Office Building #30 provide the following:

1. Satisfactory conditions in and around the field office and parking area. Snow and ice removal, etc.
2. Maintenance of utility services and light bulb replacement.
3. Twice weekly (Monday and Thursday)janitorial services and supplies (toilet paper, soap, paper towels, garbage bags, etc.).
4. Bottled drinking water.

D. Contractor shall provide six (6) new lockable four drawer file cabinets, letter size, equal to HON 370 series, with integral drawer rails so no extra hardware is required for hanging folders.

E. Contractor shall provide one full size drawing rack that is free standing on casters and 10 full size drawing sticks to be used with the rack.

F. Resident Engineer's field office and facilities shall be relocated once after its initial installation at the Contractor's expense. Relocation consists of moving the field office and facilities to a location within the VA site designated by the Resident Engineer together with providing and maintaining utilities, parking area, sanitary facilities and janitorial service in new location until completion and final acceptance of project.

G. At the completion of all work, including the punch list, the Resident Engineer's field office and facilities shall become the property of the Contractor and Contractor shall remove same, including utility connections, from the trailer back to the Medical Center utility tie-in location. The site shall be restored to original condition and finished in accordance with

contract requirements. All file cabinets provided shall become the property of the Government.

1.17 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT

A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to compliance with the following provisions:

1. Permission to use each unit or system must be given by Resident Engineer. If the equipment is not installed and maintained in accordance with the following provisions, the Resident Engineer will withdraw permission for use of the equipment.
2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.
6. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government. // Boilers, pumps, feedwater heaters and auxiliary equipment must be operated as a complete system and be fully maintained by operating personnel. Boiler water must be given complete and continuous chemical treatment. //

B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.

C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.

1.18 TEMPORARY USE OF EXISTING ELEVATORS

A. Use of existing elevators for handling building materials and Contractor's personnel will be permitted subject to following provisions:

1. Contractor makes all arrangements with the Resident Engineer for use of elevators. The Resident Engineer will ascertain that elevators are in proper condition. Contractor may use service elevators in B#1 for special nonrecurring time intervals when permission is granted.
2. Contractor covers and provides maximum protection of following elevator components:
   a. Entrance jambs, heads soffits and threshold plates.
   b. Entrance columns, canopy, return panels and inside surfaces of car enclosure walls.
   c. Finish flooring.
3. Government will accept hoisting ropes of elevator and rope of each speed governor if they are worn under normal operation. However, if these ropes are damaged by action of foreign matter such as sand, lime, grit, stones, etc., during temporary use, they shall be removed and replaced by new hoisting ropes.
4. If brake lining of elevators are excessively worn or damaged during temporary use, they shall be removed and replaced by new brake lining.
5. All parts of main controller, starter, relay panel, selector, etc., worn or damaged during temporary use shall be removed and replaced with new parts, if recommended by elevator inspector after elevator is released by Contractor.
6. Place elevator in condition equal, less normal wear, to that existing at time it was placed in service of Contractor as approved by Contracting Officer.

1.19 TEMPORARY USE OF NEW ELEVATORS

A. The Contractor and his personnel shall be permitted use of new elevator(s) subject to the following provisions:

1. Contractor shall make arrangements with the Resident Engineer for use of elevator(s). Contractor shall obtain elevator(s) for exclusive use.
2. Prior to the use of elevator(s), the Contractor shall have the elevator(s) inspected and accepted by an ASME accredited, certified elevator safety inspector. The acceptance report shall be submitted to the Resident Engineer.
3. Submit to the Resident Engineer the schedule and procedures for maintaining equipment. Indicate the day or days of the week and total hours required for maintenance. A report shall be submitted to the Resident Engineer monthly indicating the type of maintenance conducted, hours used, and any repairs made to the elevator(s).
4. The Contractor shall be responsible for enforcing the maintenance procedures.
5. During temporary use of elevator(s) all repairs, equipment replacement and cost of maintenance shall be the responsibility of the Contractor.
6. Personnel for operating elevator(s) shall not be provided by the Department of Veterans Affairs.
7. Contractor shall cover and provide maximum protection of the entire elevator(s) installation.
8. The Contractor shall arrange for the elevator company to perform operation of the elevator(s) so that an ASME accredited, certified elevator safety inspector can evaluate the equipment. The Contractor shall be responsible for any costs of the elevator company.
9. All elevator(s) parts worn or damaged during temporary use shall be removed and replaced with new parts. This shall be determined by an ASME accredited certified elevator safety inspector after temporary use and before acceptance by the Government. Submit report to the Resident Engineer for approval.
10. Elevator shall be tested as required by the testing section of the elevator(s) specifications before acceptance by the Department of Veterans Affairs.

1.20 TEMPORARY TOILETS

A. Provide where directed, (for use of all Contractor's workmen) ample temporary sanitary toilet accommodations with suitable sewer and water connections; or, when approved by Resident Engineer, provide suitable dry closets where directed. Keep such places sanitary, clean and free from bugs, and all connections and appliances connected therewith are to be removed prior to completion of contract, and premises left perfectly clean.

1.21 AVAILABILITY AND USE OF UTILITY SERVICES

A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The amount to be paid by the Contractor for chargeable electrical services shall be the prevailing rates charged to the Government. The Contractor shall carefully conserve any utilities furnished without charge.

B. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of electricity used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

C. Contractor shall install meters at Contractor's expense and furnish the Resident Engineer a monthly record of the Contractor's usage of electricity as hereinafter specified.

D. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:

1. Obtain heat by connecting to Medical Center heating distribution system.
   a. Steam is available at no cost to Contractor.

E. Electricity (for Construction and Testing): Furnish all temporary electric services.

1. Obtain electricity by connecting to the Medical Center electrical distribution system. The Contractor shall meter and pay for electricity required for electric cranes and hoisting devices, electrical welding devices and any electrical heating devices providing temporary heat. Electricity for all other uses is available at no cost to the Contractor.

F. Water (for Construction and Testing): Furnish temporary water service.

1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor. Connection point to be approved by Resident Engineer.

2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at Resident Engineer's discretion) of use of water from Medical Center's system.

G. Steam: Furnish steam system for testing required in various sections of specifications.

1. Obtain steam for testing by connecting to the Medical Center steam distribution system. Steam is available at no cost to the Contractor.
2. Maintain connections, pipe, fittings and fixtures and conserve steam-use so none is wasted. Failure to stop leakage or other waste will be cause for revocation (at Resident Engineer's discretion), of use of steam from the Medical Center's system.

H. Fuel: Natural and LP gas and burner fuel oil required for boiler cleaning, normal initial boiler-burner setup and adjusting, and for performing the specified boiler tests will be furnished by the Government. Fuel required for prolonged boiler-burner setup, adjustments, or modifications due to improper design or operation of boiler, burner, or control devices shall be furnished by the Contractor at Contractor's expense.

1.22 NEW TELEPHONE EQUIPMENT

The contractor shall coordinate with the work of installation of telephone equipment by others. This work shall be completed before the building is turned over to VA.

1.23 TESTS

A. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.

B. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

C. Mechanical and electrical systems shall be balanced, controlled and coordinated. A system is defined as the entire complex which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a complex which involves several components of different

disciplines is a boiler installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.

D. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonably short period of time during which operating and environmental conditions remain reasonably constant.

E. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

1.24 INSTRUCTIONS

A. Contractor shall furnish Maintenance and Operating manuals and verbal instructions when required by the various sections of the specifications and as hereinafter specified.

B. Manuals: Maintenance and operating manuals (four hard copies and four DVDs with scanned copies each) for each separate piece of equipment shall be delivered to the Resident Engineer coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment, component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not be accepted.

C. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed instructions to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment. All such training will be at the job site. These requirements are more specifically detailed in the various

technical sections. Instructions for different items of equipment that are component parts of a complete system, shall be given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the Resident Engineer and shall be considered concluded only when the Resident Engineer is satisfied in regard to complete and thorough coverage. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the Resident Engineer, does not demonstrate sufficient qualifications in accordance with requirements for instructors above.

1.26 GOVERNMENT-FURNISHED PROPERTY

A. The Government shall deliver to the Contractor, the Government-furnished property as indicated.

B. Equipment furnished by Government to be installed by Contractor will be furnished to Contractor at the Medical Center.

C. Contractor shall be prepared to receive this equipment from Government and store or place such equipment not less than 90 days before Completion Date of project.

D. Notify Resident Engineer in writing, 60 days in advance, of date on which Contractor will be prepared to receive equipment furnished by Government. Arrangements will then be made by the Government for delivery of equipment.

1. Immediately upon delivery of equipment, Contractor shall arrange for a joint inspection thereof with a representative of the Government. At such time the Contractor shall acknowledge receipt of equipment described, make notations, and immediately furnish the Government representative with a written statement as to its condition or shortages.
2. Contractor thereafter is responsible for such equipment until such time as acceptance of contract work is made by the Government.

E. Equipment furnished by the Government will be delivered in a partially assembled (knock down) condition in accordance with existing standard commercial practices, complete with all fittings, fastenings, and appliances necessary for connections to respective services installed under contract. All fittings and appliances (i.e., couplings, ells, tees, nipples, piping, conduits, cables, and the like) necessary to make the connection between the Government furnished equipment item and the utility stub-up

shall be furnished and installed by the contractor at no additional cost to the Government.

F. Completely assemble and install the Government furnished equipment in place ready for proper operation in accordance with specifications and drawings.

G. Furnish supervision of installation of equipment at construction site by qualified factory trained technicians regularly employed by the equipment manufacturer.

1.26 RELOCATED/EQUIPMENT/ITEMS/

Not applicable.

1.27 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS EQUIPMENT

Not applicable.

1.28 CONSTRUCTION SIGN

A. Provide a Construction Sign where directed by the Resident Engineer. All wood members shall be of framing lumber. Cover sign frame with 0.7 mm (24 gage) galvanized sheet steel nailed securely around edges and on all bearings. Provide three 100 by 100 mm (4 inch by 4 inch) posts (or equivalent round posts) set 1200 mm (four feet) into ground. Set bottom of sign level at 900 mm (three feet) above ground and secure to posts with through bolts. Make posts full height of sign. Brace posts with 50 x 100 mm (two by four inch) material as directed.

B. Paint all surfaces of sign and posts two coats of white gloss paint. Border and letters shall be of black gloss paint, except project title which shall be blue gloss paint.

C. Maintain sign and remove it when directed by the Resident Engineer.

D. Detail Drawing of construction sign showing required legend and other characteristics of sign is shown on the drawings.

1.29 SAFETY SIGN

A. Provide a Safety Sign where directed by Resident Engineer. Face of sign shall be 19 mm (3/4 inch) thick exterior grade plywood. Provide two 100 mm by 100 mm (four by four inch) posts extending full height of sign and 900 mm (three feet) into ground. Set bottom of sign level at 1200 mm (four feet) above ground.

B. Paint all surfaces of Safety Sign and posts with one prime coat and two coats of white gloss paint. Letters and design shall be painted with gloss paint of colors noted.

C. Maintain sign and remove it when directed by Resident Engineer.

D. Detail Drawing Number 45 of safety sign showing required legend and other characteristics of sign is shown on the drawings.

E. Post the number of accident free days on a daily basis.

1.30 CONSTRUCTION DIGITAL IMAGES

A. During the construction period through completion, furnish Department of Veterans Affairs with **1000** views of digital images, including one color print of each view and one Compact Disc (CD) per visit containing those views taken on that visit. Digital views shall be taken of exterior and/or interior as selected and directed by Resident Engineer (RE). Each view shall be taken with a professional grade camera with minimum size of 6 megapixels (MP) and the images will be a minimum of 2272 x 1704 pixels for the 200x250mm (8x 10 inch) prints and 2592 x 1944 pixels for the 400x500 mm (16 x 20 inch) prints, as per these specifications:

1. Normally such images will be taken at monthly intervals. However, the Resident Engineer may also direct the taking of special digital images at any time prior to completion and acceptance of contract. If the number of trips to the site exceeds an average of one per month of the contract performance period then an adjustment in contract price will be made in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) of Section 00 72 00, GENERAL CONDITIONS.
2. Photos of the ground breaking, steel topping out and ribbon cutting shall be part of the cost of the 1000 views.
3. In event a greater or lesser number of images than specified above are required by the Resident Engineer, adjustment in contract price will be made in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).

B. Images shall be taken by a commercial photographer and must show distinctly, at as large a scale as possible, all parts of work embraced in the picture.

C. Prints shall be made on 200 x 250 mm (8 by 10 inch) regular-weight matte archival grade photographic paper and produced by a process with a minimum of 300 pixels per inch (PPI). Prints must be printed using the commercial RA4 process (inkjet prints will not be acceptable). Photographs shall have 200 x 200 mm (8 by 8 inch) full picture print with no margin on three sides and a 50 mm (2 inches) margin on the bottom for pre-typed self-adhesive identity label to be **added by the contractor**. It is required that the prints are professionally processed so the quality will meet or exceed that of the

same size print made with a film camera. Prints must be shipped flat to the Resident Engineer.

E. Images on CD-ROM shall be recorded in JPEG format with a minimum of 24 bit color and no reduction in actual picture size. Compressed size of the file shall be no less than 80% or the original with no loss of information. File names shall contain the date the image was taken, the Project number and a unique sequential identifier. The CD-ROM shall also contain an index of all the images contained therein in either a TXT or Microsoft Word format.

F. In case any set of prints are not submitted within five days of date established by Resident Engineer for taking thereof, the Resident Engineer may have such images/photographs taken and cost of same will be deducted from any money due to the Contractor.

G. Interior Final Photos: After completion of all work in an area final interior photos will be taken. The camera must allow the colors to be as close as possible to the actual colors. View shall be taken after final completion of work and coordinated with Resident Engineer. The images shall be printed out and provided on a CD to the RE Office. A minimum of 50 photos shall be provided. Prints shall be made on 8 inch by 10 inch regular weight matte archival grade photographic paper and produced by a process with a minimum of 300 pixels per inch. Prints must be printed using the commercial RA4 process (inkjet prints are not acceptable). It is required that the prints are professionally processed.

1.31 FINAL ELEVATION DIGITAL IMAGES

A. A minimum of four (4) images of each elevation shall be taken with a minimum 6 MP camera, by a professional photographer with different settings to allow the Resident Engineer to select the image to be printed. All images are provided to the RE on a CD.

B. Photographs shall be taken upon completion, including landscaping. They shall be taken on a clear sunny day to obtain sufficient detail to show depth and to provide clear, sharp pictures. Pictures shall be 400 mm x 500 mm (16 by 20 inches), printed on regular weight paper, matte finish archival grade photographic paper and produced by a RA4 process from the digital image with a minimum 300 PPI. Identifying data shall be carried on label affixed to back of photograph without damage to photograph and shall be similar to that provided for final construction photographs.

C. Furnish six (6) 400 mm x 500 mm (16 by 20 inch) color prints of the following buildings constructed under this project (elevations as selected by the RE

from the images taken above). Photographs shall be artistically composed showing full front elevations. All images shall become property of the Government. Each of the selected six prints shall be place in a frame with a minimum of 2 inches of appropriate matting as a border. Provide a selection of a minimum of 3 different frames from which the SRE will select one style to frame all six prints. Photographs with frames shall be delivered to the Resident Engineer in boxes suitable for shipping.

1. Research Office Building #30.

1.32 HISTORIC PRESERVATION

Where the Contractor or any of the Contractor's employees, prior to, or during the construction work, are advised of or discover any possible archeological, historical and/or cultural resources, the Contractor shall immediately notify the Resident Engineer verbally, and then with a written follow up.

1.33 CONSTRUCTION MEETINGS

At a minimum, weekly construction meetings will be held at the project site - RE Office. Attendees shall include the REs, contracto9r's personnel and other entities concerned with current progress or involved in planning, coordination or performance of future activities. All participants at the meetings shall be familiar with the project and authorized to conclude matters relating to the work. If the RE determines that the meetings need to be held more frequently, the contractor shall oblige at no cost.

1.34 EXISTING BUILDING AIR INTAKES

The existing hospital buildings have multiple AHU and air intake locations where fresh air is brought into the buildings. The contractor must prevent exhaust, fumes, chemical odors, dust, etc. (as a result of their work), from entering the building. A plan of prevention (including charcoal filters, pre-filters and changes in work hours to accommodate down time for specific air intake locations)must be submitted to the RE Office for approval prior to the start of work.

1.35 MISCELLANOUS ITEMS

A. Parking - contractor and contractor's employees shall make their own arrangements for vehicle parking off-site.

B. Contractor Communications - at all times during the performance of this work, the contractor's Superintendent and Project manager shall be available via cell phone. Prior to the start of work, the contractor shall provide the RE with emergency contact information for contractor personnel.

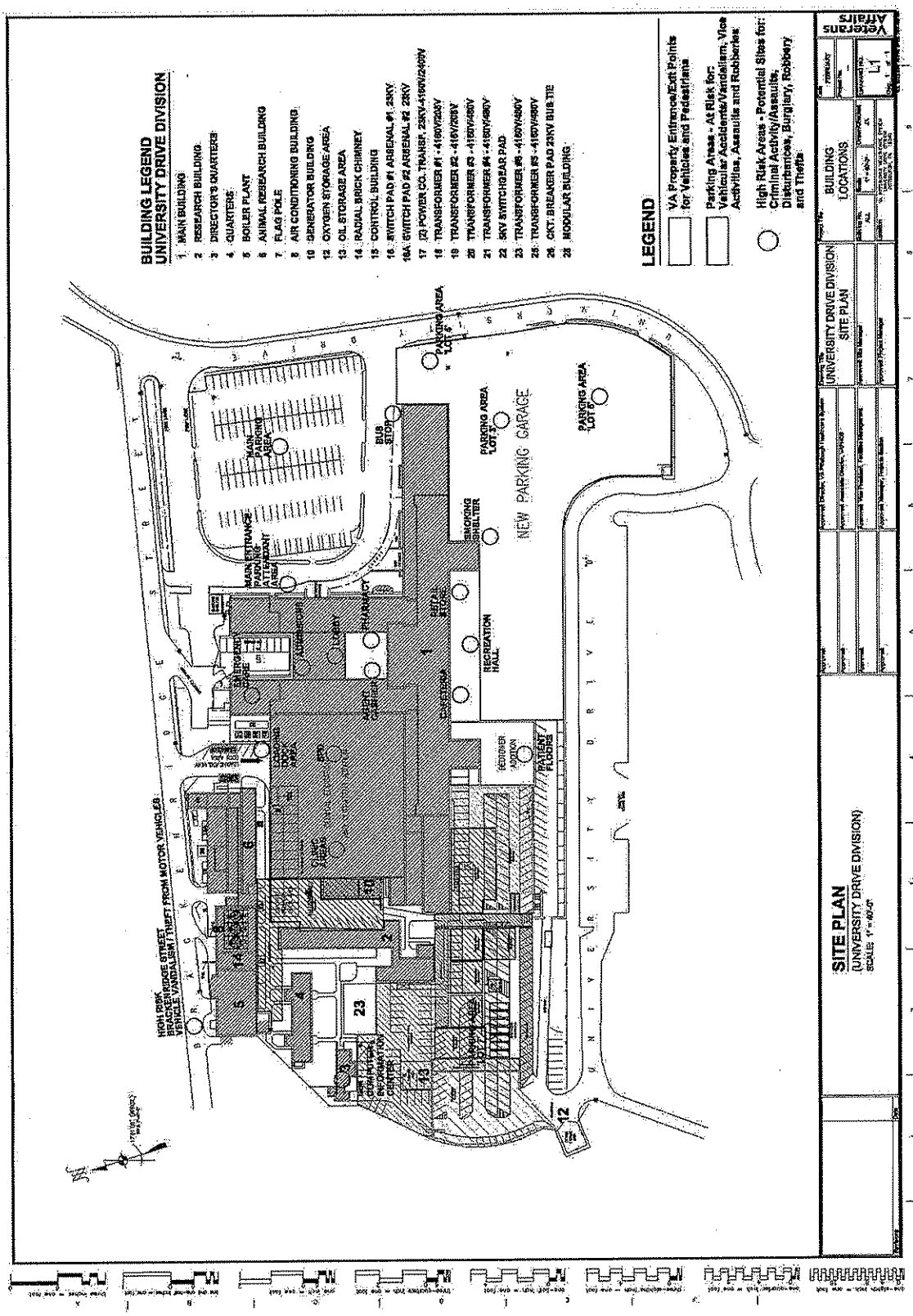
C. VA Owned Material and Equipment - use of VA/government owned material and equipment is prohibited.

D. Work Hours - Standard work hours for the VAMC are Monday - Friday, 7:00a to 3:30p. Coordinate after hour work requests with the RE.

E. Security - contractors shall wear/display VAMC issued badges when working within occupied buildings.

F. Delivery of Materials - contractor shall coordinate material and equipment deliveries to the project site. VA personnel will not receive contractor deliveries.

ATTACHMENT A



- - - E N D - - -

SECTION 01 00 00
GENERAL REQUIREMENTS

TABLE OF CONTENTS

SECTION 01 00 00
GENERAL REQUIREMENTS

1.1 GENERAL INTENTION

A. Contractor shall completely prepare site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for VA Pittsburgh Healthcare System, University Drive division, CARES Consolidation Phase 2, Research Office Building #30 as required by drawings and specifications.

B. Visits to the site by Bidders may be made only by appointment with the Resident Engineer's Office (412-360-6239).

C. Office of **Astorino, 227 Fort Pitt Boulevard, Pittsburgh, PA 15222** as Architect-Engineers, will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.

D. Before placement and installation of work subject to tests by testing laboratory retained by Contractor, the Contractor shall submit to the Resident Engineer their weekly testing schedule four days in advance.

E. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access.

F. Prior to commencing work, general contractor shall provide proof that an OSHA certified "competent person" (CP) (29 CFR 1926.20(b) (2) will maintain a presence at the work site whenever the general or subcontractors are present.

G. Training:

1. All employees of general contractor or subcontractors shall have the 10-hour or 30-hour OSHA certified Construction Safety course and/or other relevant competency training, as determined by the RE.
2. Submit training records of all such employees for approval before the start of work or before the employee arrives on site.

1.2 STATEMENT OF BID ITEM(S)

A. ITEM I,GENERAL CONSTRUCTION: Work includes general construction, alterations, site work, site utilities, roads, walks, grading, drainage, mechanical and electrical work, utility systems, elevators, roof top helipad and the necessary removal of existing structures, abatement and construction and certain other items.

B. BASE BID:

1. Contractor shall furnish labor and materials, equipment, transportation, supervision, coordination and services required to perform and complete the work required by drawings and specifications for the CARES Consolidation Projects, Research Office Building work at the VA Pittsburgh Health Care System, University Drive Division, University Drive C, Pittsburgh, PA 15240-1005. The work will consist of one partial mechanical basement level, three stories of offices (two floors of offices and open areas and one floor of office and mechanical room), and one rooftop helipad. A bridge connecting the helipad by an intermediate patient/service elevator stop and the third floor of the main hospital (Building 1) is part of the work.
2. The Research Office Building is a new facility intended to provide offices and future research spaces for the VA's Research and Development group. It is to be constructed at the VA University Drive site in the Oakland section of Pittsburgh, PA, adjacent to the existing VA hospital.
3. The gross area of the project is 99,358 square feet and is broken down as follows:

Basement mechanical equipment	20,930 S.F.
Ground floor – offices, conference area, open area for future lab	25,206 S.F.
First floor – offices and open area for future lab	25,668 S.F.
Second floor – offices and mechanical equipment room	23,429 S.F.
Third floor bridge	1,958 S.F.
Roof	1,548 S.F.
Total gross area	99,358 S.F.

4. The new building will be connected to the third floor of the existing hospital building by a restricted access bridge.

C. ALTERNATE

1. ALTERNATE NO. 1 BASEMENT ADDITION: Under this Alternate, the Contractor shall build an additional basement bay located between columns A-B and 2-12. This addition relocates the fire pump room with fire pump equipment with water storage tank and HVAC equipment. The areaway tunnel is revised to be inside the building. Also included are the additional engineering connections required for the equipment relocation.
   Drawings include: GS0-005A, SS1-101A, SS6-101A, AS1-101A, AS5-102A,

AS5-117A, MH1-101A, MH2-101A, MH2-102A, PL1-100A, PL1-101A, FP1-101A, EL1-101A, EP1-101A

2. ALTERNATE NO.2 DEMOUNTABLE PARTITIONS, PLUG AND PLAY POWER PREINSTALLED IN WALLS: Under this Alternate, the Contractor shall provide demountable partitions in lieu of drywall partitions as indicated on drawings AS1-111A, AS1-121A, AS7-150, AS7-151, AND AS7-152. Changes in the ceiling required for the installation of demountable partitions are indicated on drawings AS9-111A, AS9-121A. Demountable partitions are also described in specification section 10 22 19.13.

3. ALTERNATE NO.3 DIGITAL LIGHTING CONTROLS, INTEGRATE WITH WINDOW SHADES: Under this Alternate, the Contractor shall provide head end quantum lighting control system (based on Lutron systems) that connects to the eco dimming ballast system. Each dimming ballast, occupancy sensor, low voltage switching and shade control are connected, monitored and controlled by the quantum server. See drawing EP7-109 and specification section 26 09 43 NETWORK LIGHTING CONTROLS for additional information.

4. ALTERNATE NO. 4 CHANGE FROM LOUIS POULSEN OSLO PENDANTS TO LOUIS POULSEN PH ARTICHOKE PENDANTS: Under this Alternate, the Contractor shall provide light fixture F19 instead of light fixture F17. See drawings EL1-111, EL1-121, EL1-131 AND EP6-101.

5. ALTERNATE NO.5 EXTERIOR SIGN (POWER AND CONDUIT IN BASE BID): Under this Alternate, the Contractor shall provide a monumental illuminated informational exterior sign as described in EXTERIOR SIGN DESIGN DEVELOPMENT PROGRAM in the project manual in the signage section. Sign base and conduit provided in base bid.

6. ALTERNATE NO.6 INTERIOR SIGNAGE Under this Alternate, the Contractor shall provide room identification signs designated by IN.03.01 and secondary room identification signs designated by IN.04.02 on the drawings. Locations of these signs are indicated on drawings AS1-301, AS1-311, AS1-321, AS1-331 AND AS1-341. These signs are described in the specifications in section 10 14 00.

7. ALTERNATE NO.7 SOUND MASKING): Under this Alternate, the Contractor shall provide power at a location in the telecom room for sound masking located under the small profile access flooring. Sound masking design and installation shall be by qualified vendor.

D. PHASING:

1. Phasing of construction operations for the proposed Research Office Building is partially dependent upon the construction operations and

schedule for the Mental Health Building and Road Improvements project that are currently underway. Construction staging for this project is planned to take place in the vicinity of the ROB site with the Resident Engineers coordinating the locations.

2. Phase 1: Demolition of existing buildings and asbestos abatement on the ROB site may begin as soon as Mental Health Building construction staging can be moved or is demobilized.

3. Phase 2: Utility relocation and improvements will begin for the ROB site after demolition of existing buildings.

4. Phase 3: Mine grouting can commenced and building foundations.

5. Phase 4: Building Construction.

6. There is minimum construction staging and contractor parking for the ROB available on the ROB site. Contractor staging and material stockpiles will be reviewed and coordinated with the Resident Engineer.

7. There should be minimal disruption to hospital routine during construction of the ROB, since it is detached from the main hospital.

8. There should be minimal disruption to pedestrian and vehicular traffic within the ROB site, because the site is at the rear of the main hospital and most vehicular and pedestrian traffic will be handled by the new parking garage in the front of the hospital.

E. SITE LAYOUT: The ROB project is located in Parking Pot #7 (west of the main VAMC building B#1). There are areas of Lot #7 that are being used by the VA Medical Center for their on-going construction projects. The enclosed sketch (Attachment A) designates the space in the lot.

F. INTERIOR WORK in B#1: work at the bridge connection to the 3FL shall be done during off hours (evenings and/or weekends); telephone/data cabling work
on the 3FL – 5FL shall be done on off hours (evenings and/or weekends).

1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

A. AFTER AWARD OF CONTRACT, one electronic set of specifications and drawings on CD will be furnished.

1.4 CONSTRUCTION SECURITY REQUIREMENTS

A. Security Plan:

1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations. Driver’s licenses for all employees shall be submitted with safety training information.

B. Security Procedures:
   1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
   2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 days notice to the RE so that arrangements can be made. This notice is separate from any notices required for utility shutdown described later in this section.
   3. No photography of VA premises is allowed without written permission of the RE.
   4. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national or VAMC emergency. The General Contractor may return to the site only with the written approval of the Resident Engineer.

C. Key Control:
   1. The General Contractor shall provide duplicate keys and lock combinations to the Resident Engineer for all locked gates/project doors.

D. Document Control:
   1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of "sensitive information".
   2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
   4. Certain documents, sketches, videos or photographs and drawings may be marked "Law Enforcement Sensitive" or "Sensitive Unclassified". Secure such information in separate containers and limit the access to only those who will need it for the project. Return the information to the Resident Engineer upon request.
   5. These security documents shall not be removed or transmitted from the project site without the written approval of Resident Engineer.
   6. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
   7. Notify the Resident Engineer immediately when there is a loss or compromise of "sensitive information".

1.5 FIRE SAFETY

A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):
   E84-2008.....Surface Burning Characteristics of Building Materials
2. National Fire Protection Association (NFPA):
   10-2006.....Standard for Portable Fire Extinguishers
   30-2007.....Flammable and Combustible Liquids Code
   51B-2003.....Standard for Fire Prevention During Welding, Cutting and Other Hot Work
   70-2007.....National Electrical Code
   241-2004.....Standard for Safeguarding Construction, Alteration, and Demolition Operations
3. Occupational Safety and Health Administration (OSHA):
   29 CFR 1926.....Safety and Health Regulations for Construction

B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Resident Engineer for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor’s competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, etc. Documentation shall be provided to the Resident Engineer that individuals have undergone contractor’s safety briefing.

C. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.

D. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).

E. Temporary Construction Partitions:

1. Install and maintain temporary construction partitions to provide 2 hour separations between construction areas and adjoining occupied

areas. Construct partitions of gypsum board in accordance with ASTM E84) on both sides of fire retardant treated wood or metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Seal joints and penetrations. At door openings, install 90 minute rated doors if needed.

2. Install two-hour fire-rated temporary construction partitions to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, vertical shafts and openings enclosures.
3. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials in accordance with Section 07 84 00, FIRESTOPPING.

F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.

G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Resident.

H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Resident Engineer.

I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.

J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.

K. Standpipes: Install and extend standpipes up with each floor in accordance with 29 CFR 1926 and NFPA 241. Do not charge wet standpipes subject to freezing until weather protected.

L. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Resident Engineer. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results of any tests performed shall be recorded by the medical center and copies provided to the Resident Engineer.

N. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Resident Engineer.

O. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate/submit hot work permit to Resident Engineer four hours in advance of work. Designate contractor's responsible project-site fire prevention program manager to permit hot work. Hot work permit forms to be provided by RE.

P. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Resident Engineer.

Q. Smoking: Smoking is **prohibited** within VA buildings at all times. Contractors are permitted to smoke in VAMC staff designated areas only.

R. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.

S. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

T. If required, submit documentation to the Resident Engineer that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.6 OPERATIONS AND STORAGE AREAS

A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

C. The Contractor shall, under regulations prescribed by the Resident Engineer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Resident Engineer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or

local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

(FAR 52.236-10)

D. Working space and space available for storing materials shall be as shown and determined by the Resident Engineer.
Working space and space available for storing materials shall be as shown and determined by the Resident Engineer.

E. Workmen are subject to rules of the VA Medical Center.

F. Execute work in such a manner as to interfere as little as possible with work being done by others. Keep roads clear of construction materials, debris, standing construction equipment and vehicles at all times. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others. Use of equipment and tools that transmit vibrations and noises through the building structure, are not permitted in buildings that are occupied, during construction, jointly by patients or medical personnel, and Contractor's personnel, except as permitted by Resident Engineer where required by limited working space.
   1. Do not store materials and equipment in other than assigned areas.
   2. Schedule delivery of materials and equipment to immediate construction working areas within buildings in use by Department of Veterans Affairs in quantities sufficient for not more than two work days.

F. Construction Fence: Before construction operations begin, Contractor shall provide a chain link construction fence, 2.1m (seven feet) minimum height, around the construction area indicated on the drawings. Provide gates as required for access with necessary hardware, including hasps and padlocks. Fasten fence fabric to terminal posts with tension bands and to line posts and top and bottom rails with tie wires spaced at maximum 375mm (15 inches). Bottom of fences shall extend to 25mm (one inch) above grade. Remove the fence when directed by Resident Engineer.

G. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone),

they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by Resident Engineer.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of Resident Engineer. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, 27 05 11 REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS and 28 05 11, REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS for additional requirements.
2. Contractor shall submit a request to interrupt any such services to Resident Engineer, in writing, 72 hours in advance of proposed interruption. Request shall state reason, date, exact time of, approximate duration of such interruption and a sketch identifying area.
3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of VA Medical Center. Interruption time approved may occur at other than Contractor's normal working hours.
4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the Resident Engineer.
5. In case of a contract construction emergency, service will be interrupted on approval of Resident Engineer. Such approval will be confirmed in writing as soon as practical.
6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.

H. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or

partitions; so that they are completely behind the finished surfaces. Coordinate with Resident Engineer.

I. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
   1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles. Wherever excavation for new utility lines cross existing roads, at least one lane must be open to traffic at all times (flagman are required for traffic control).
   2. Method and scheduling of required cutting, altering and removal of existing roads; walks and entrances must be approved by the Resident Engineer.

J. Coordinate the work for this contract with other construction operations as directed by Resident Engineer. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

1.7 ALTERATIONS

A. Survey: Before any work is started, the Contractor shall make a thorough survey with the Resident Engineer areas of buildings in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by to the Resident Engineer. This report shall list by rooms and spaces:
   1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas.
   2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.
   3. Shall note any discrepancies between drawings and existing conditions at site.
   4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and Resident Engineer.

B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of Resident Engineer to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by Contractor with new items in accordance with specifications which will be furnished by Government. Provided the contract work is changed by reason of this

subparagraph B, the contract will be modified accordingly, under provisions of clause entitled "DIFFERING SITE CONDITIONS" (FAR 52.236-2) and "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).

C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and Resident Engineer together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:
   1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.

D. Protection: Provide the following protective measures:
   1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
   2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
   3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

E. Final Cleanup:
   1. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.
   2. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.
   3. All new air ducts shall be cleaned prior to final inspection and new filters installed.

1.8 DISPOSAL AND RETENTION

Not applicable.

1.9 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(FAR 52.236-9)

C. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

D. Refer to FAR clause 52.236-7, "Permits and Responsibilities," which is included in General Conditions. A National Pollutant Discharge Elimination System (NPDES) permit is required for this project. The Contractor is considered an "operator" under the permit and has extensive responsibility for compliance with permit requirements. VA will make the permit application available at the (appropriate medical center) office. The apparent low bidder, contractor and affected subcontractors shall furnish all information and certifications that are required to comply with the permit process and permit requirements. Many of the permit requirements will be satisfied by completing construction as shown and specified. Some requirements involve the Contractor's method of operations and operations planning and the Contractor is

responsible for employing best management practices. The affected activities often include, but are not limited to the following:

- Designating areas for equipment maintenance and repair;
- Providing waste receptacles at convenient locations and provide regular collection of wastes;
- Locating equipment wash down areas on site, and provide appropriate control of wash-waters;
- Providing protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials; and
- Providing adequately maintained sanitary facilities.

1.10 RESTORATION

A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the Resident Engineer. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the Resident Engineer before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.

B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.

C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.

D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2).

1.11 PHYSICAL DATA

A. Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for

any interpretation of or conclusion drawn from the data or information by the Contractor.

1. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by the VA's Architect Engineer.

(FAR 52.236-4)

B. Subsurface conditions have been developed by core borings and test pits. Logs of subsurface exploration are shown diagrammatically on drawings.

C. A copy of the soil report will be made available for inspection by bidders upon request.

D. Government does not guarantee that other materials will not be encountered nor that proportions, conditions or character of several materials will not vary from those indicated by explorations. Bidders are expected to examine site of work and logs of borings; and, after investigation, decide for themselves character of materials and make their bids accordingly. Upon proper application to Department of Veterans Affairs, bidders will be permitted to make subsurface explorations of their own at site.

1.12 PROFESSIONAL SURVEYING SERVICES

A registered professional land surveyor or registered civil engineer whose services are retained and paid for by the Contractor shall perform services specified herein and in other specification sections. The Contractor shall certify that the land surveyor or civil engineer is not one who is a regular employee of the Contractor, and that the land surveyor or civil engineer has no financial interest in this contract.

1.13 LAYOUT OF WORK

A. The Contractor shall lay out the work from established base lines and bench marks, indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at Contractor's own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through Contractor's negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

(FAR 52.236-17)

B. Establish and plainly mark center lines for each building and such other lines and grades that are reasonably necessary to properly assure that location, orientation, and elevations established for each such structure, roads, parking lot are in accordance with lines and elevations shown on contract drawings.

C. Following completion of general mass excavation and before any other permanent work is performed, establish and plainly mark (through use of appropriate batter boards or other means) sufficient additional survey control points or system of points as may be necessary to assure proper alignment, orientation, and grade of all major features of work. Survey shall include, but not be limited to, location of lines and grades of footings, exterior walls, center lines of columns in both directions, major utilities and elevations of floor slabs:

1. Such additional survey control points or system of points thus established shall be checked and certified by a registered land surveyor or registered civil engineer. Furnish such certification to the Resident Engineer before any work (such as footings, floor slabs, columns, walls, utilities and other major controlling features) is placed.

D. During progress of work, and particularly as work progresses from floor to floor, Contractor shall have line grades and plumbness of all major form work checked and certified by a registered land surveyor or registered civil engineer as meeting requirements of contract drawings. Furnish such certification to the Resident Engineer before any major items of concrete work are placed. In addition, Contractor shall also furnish to the Resident Engineer certificates from a registered land surveyor or registered civil engineer that the following work is complete in every respect as required by contract drawings.

1. Lines of each building and/or addition.
2. Elevations of bottoms of footings and tops of floors of each building and/or addition.
3. Lines and elevations of sewers and of all outside distribution systems.
4. Lines and elevations of roads, streets and parking lots.

E. Whenever changes from contract drawings are made in line or grading requiring certificates, record such changes on a reproducible drawing bearing the registered land surveyor or registered civil engineer seal, and forward these drawings upon completion of work to Resident Engineer.

F. The Contractor shall perform the surveying and layout work of this and other articles and specifications in accordance with the provisions of Article "Professional Surveying Services".

1.14 AS-BUILT DRAWINGS

A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.

B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the Resident Engineer's review, as often as requested.

C. Contractor shall deliver two approved completed sets of as-built drawings to the Resident Engineer within 15 calendar days after each completed phase and after the acceptance of the project by the Resident Engineer. Both in hard copy and electronically.

D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.15 USE OF ROADWAYS

A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the Resident Engineer, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

B. When new permanent roads are to be a part of this contract, Contractor may construct them immediately for use to facilitate building operations. These roads may be used by all who have business thereon within zone of building operations.

C. When certain buildings (or parts of certain buildings) are required to be completed in advance of general date of completion, all roads leading thereto must be completed and available for use at time set for completion of such buildings or parts thereof.

1.16 RESIDENT ENGINEER'S FIELD OFFICE

A. The Resident Engineers currently use a trailer that has been provided by the UD Consolidation Building #29 contractor. This contractor (ROB #30) shall take over the rental costs associated with the trailer on August 12, 2011. The trailer shall remain in its current location near the VAMC Emergency Entrance.

B. The Contractor shall maintain the following:

1. Electricity, hot and cold water, necessary utility services and telephone/data.

2. Thermostatically controlled, centralized heating and air conditioning system designed to maintain the temperature between 21 and 27 degrees C (70 and 80 degrees F) with 50 percent relative humidity maintained during the air conditioning season.

C. Contractor shall, for the duration of the Research Office Building #30 provide the following:
   1. Satisfactory conditions in and around the field office and parking area. Snow and ice removal, etc.
   2. Maintenance of utility services and light bulb replacement.
   3. Twice weekly (Monday and Thursday) janitorial services and supplies (toilet paper, soap, paper towels, garbage bags, etc.).
   4. Bottled drinking water.

D. Contractor shall provide six (6) new lockable four drawer file cabinets, letter size, equal to HON 370 series, with integral drawer rails so no extra hardware is required for hanging folders.

E. Contractor shall provide one full size drawing rack that is free standing on casters and 10 full size drawing sticks to be used with the rack.

F. Resident Engineer's field office and facilities shall be relocated once after its initial installation at the Contractor's expense. Relocation consists of moving the field office and facilities to a location within the VA site designated by the Resident Engineer together with providing and maintaining utilities, parking area, sanitary facilities and janitorial service in new location until completion and final acceptance of project.

G. At the completion of all work, including the punch list, the Resident Engineer's field office and facilities shall become the property of the Contractor and Contractor shall remove same, including utility connections, from the trailer back to the Medical Center utility tie-in location. The site shall be restored to original condition and finished in accordance with contract requirements. All file cabinets provided shall become the property of the Government.

1.17 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT

A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to compliance with the following provisions:
   1. Permission to use each unit or system must be given by Resident Engineer. If the equipment is not installed and maintained in accordance with the following provisions, the Resident Engineer will withdraw permission for use of the equipment.

2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.
6. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government. // Boilers, pumps, feedwater heaters and auxiliary equipment must be operated as a complete system and be fully maintained by operating personnel. Boiler water must be given complete and continuous chemical treatment.

B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.

C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.

1.18 TEMPORARY USE OF EXISTING ELEVATORS

A. Use of existing elevators for handling building materials and Contractor's personnel will be permitted subject to following provisions:

1. Contractor makes all arrangements with the Resident Engineer for use of elevators. The Resident Engineer will ascertain that elevators are

in proper condition. Contractor may use service elevators in B#1 for special nonrecurring time intervals when permission is granted.

2. Contractor covers and provides maximum protection of following elevator components:
   a. Entrance jambs, heads soffits and threshold plates.
   b. Entrance columns, canopy, return panels and inside surfaces of car enclosure walls.
   c. Finish flooring.
3. Government will accept hoisting ropes of elevator and rope of each speed governor if they are worn under normal operation. However, if these ropes are damaged by action of foreign matter such as sand, lime, grit, stones, etc., during temporary use, they shall be removed and replaced by new hoisting ropes.
4. If brake lining of elevators are excessively worn or damaged during temporary use, they shall be removed and replaced by new brake lining.
5. All parts of main controller, starter, relay panel, selector, etc., worn or damaged during temporary use shall be removed and replaced with new parts, if recommended by elevator inspector after elevator is released by Contractor.
6. Place elevator in condition equal, less normal wear, to that existing at time it was placed in service of Contractor as approved by Contracting Officer.

1.19 TEMPORARY USE OF NEW ELEVATORS

A. The Contractor and his personnel shall be permitted use of new elevator(s) subject to the following provisions:
   1. Contractor shall make arrangements with the Resident Engineer for use of elevator(s). Contractor shall obtain elevator(s) for exclusive use.
   2. Prior to the use of elevator(s), the Contractor shall have the elevator(s) inspected and accepted by an ASME accredited, certified elevator safety inspector. The acceptance report shall be submitted to the Resident Engineer.
   3. Submit to the Resident Engineer the schedule and procedures for maintaining equipment. Indicate the day or days of the week and total hours required for maintenance. A report shall be submitted to the Resident Engineer monthly indicating the type of maintenance conducted, hours used, and any repairs made to the elevator(s).
   4. The Contractor shall be responsible for enforcing the maintenance procedures.

5. During temporary use of elevator(s) all repairs, equipment replacement and cost of maintenance shall be the responsibility of the Contractor.
6. Personnel for operating elevator(s) shall not be provided by the Department of Veterans Affairs.
7. Contractor shall cover and provide maximum protection of the entire elevator(s) installation.
8. The Contractor shall arrange for the elevator company to perform operation of the elevator(s) so that an ASME accredited, certified elevator safety inspector can evaluate the equipment. The Contractor shall be responsible for any costs of the elevator company.
9. All elevator(s) parts worn or damaged during temporary use shall be removed and replaced with new parts. This shall be determined by an ASME accredited certified elevator safety inspector after temporary use and before acceptance by the Government. Submit report to the Resident Engineer for approval.
10. Elevator shall be tested as required by the testing section of the elevator(s) specifications before acceptance by the Department of Veterans Affairs.

1.20 TEMPORARY TOILETS

A. Provide where directed, (for use of all Contractor's workmen) ample temporary sanitary toilet accommodations with suitable sewer and water connections; or, when approved by Resident Engineer, provide suitable dry closets where directed. Keep such places sanitary, clean and free from bugs, and all connections and appliances connected therewith are to be removed prior to completion of contract, and premises left perfectly clean.

1.21 AVAILABILITY AND USE OF UTILITY SERVICES

A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The amount to be paid by the Contractor for chargeable electrical services shall be the prevailing rates charged to the Government. The Contractor shall carefully conserve any utilities furnished without charge.

B. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of electricity used for the purpose of determining charges. Before final acceptance of the work by the

Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

C. Contractor shall install meters at Contractor's expense and furnish the Resident Engineer a monthly record of the Contractor's usage of electricity as hereinafter specified.

D. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:
   1. Obtain heat by connecting to Medical Center heating distribution system.
      a. Steam is available at no cost to Contractor.

E. Electricity (for Construction and Testing): Furnish all temporary electric services.
   1. Obtain electricity by connecting to the Medical Center electrical distribution system. The Contractor shall meter and pay for electricity required for electric cranes and hoisting devices, electrical welding devices and any electrical heating devices providing temporary heat. Electricity for all other uses is available at no cost to the Contractor.

F. Water (for Construction and Testing): Furnish temporary water service.
   1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor. Connection point to be approved by Resident Engineer.
   2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at Resident Engineer's discretion) of use of water from Medical Center's system.

G. Steam: Furnish steam system for testing required in various sections of specifications.
   1. Obtain steam for testing by connecting to the Medical Center steam distribution system. Steam is available at no cost to the Contractor.
   2. Maintain connections, pipe, fittings and fixtures and conserve steam-use so none is wasted. Failure to stop leakage or other waste will be cause for revocation (at Resident Engineer's discretion), of use of steam from the Medical Center's system.

H. Fuel: Natural and LP gas and burner fuel oil required for boiler cleaning, normal initial boiler-burner setup and adjusting, and for

performing the specified boiler tests will be furnished by the Government. Fuel required for prolonged boiler-burner setup, adjustments, or modifications due to improper design or operation of boiler, burner, or control devices shall be furnished by the Contractor at Contractor's expense.

1.22 NEW TELEPHONE EQUIPMENT

The contractor shall coordinate with the work of installation of telephone equipment by others. This work shall be completed before the building is turned over to VA.

1.23 TESTS

A. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.

B. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

C. Mechanical and electrical systems shall be balanced, controlled and coordinated. A system is defined as the entire complex which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a complex which involves several components of different disciplines is a boiler installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.

D. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonably short period of time during which operating and environmental conditions remain reasonably constant.

E. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

1.24 INSTRUCTIONS

A. Contractor shall furnish Maintenance and Operating manuals and verbal instructions when required by the various sections of the specifications and as hereinafter specified.

B. Manuals: Maintenance and operating manuals (four hard copies and four DVDs with scanned copies each) for each separate piece of equipment shall be delivered to the Resident Engineer coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment, component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not be accepted.

C. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed instructions to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment. All such training will be at the job site. These requirements are more specifically detailed in the various technical sections. Instructions for different items of equipment that are component parts of a complete system, shall be given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the Resident Engineer and shall be considered concluded only when the Resident Engineer is satisfied in regard to complete and thorough coverage. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the

Resident Engineer, does not demonstrate sufficient qualifications in accordance with requirements for instructors above.

1.26 GOVERNMENT-FURNISHED PROPERTY

A. The Government shall deliver to the Contractor, the Government-furnished property as indicated.

B. Equipment furnished by Government to be installed by Contractor will be furnished to Contractor at the Medical Center.

C. Contractor shall be prepared to receive this equipment from Government and store or place such equipment not less than 90 days before Completion Date of project.

D. Notify Resident Engineer in writing, 60 days in advance, of date on which Contractor will be prepared to receive equipment furnished by Government. Arrangements will then be made by the Government for delivery of equipment.

1. Immediately upon delivery of equipment, Contractor shall arrange for a joint inspection thereof with a representative of the Government. At such time the Contractor shall acknowledge receipt of equipment described, make notations, and immediately furnish the Government representative with a written statement as to its condition or shortages.
2. Contractor thereafter is responsible for such equipment until such time as acceptance of contract work is made by the Government.

E. Equipment furnished by the Government will be delivered in a partially assembled (knock down) condition in accordance with existing standard commercial practices, complete with all fittings, fastenings, and appliances necessary for connections to respective services installed under contract. All fittings and appliances (i.e., couplings, ells, tees, nipples, piping, conduits, cables, and the like) necessary to make the connection between the Government furnished equipment item and the utility stub-up shall be furnished and installed by the contractor at no additional cost to the Government.

F. Completely assemble and install the Government furnished equipment in place ready for proper operation in accordance with specifications and drawings.

G. Furnish supervision of installation of equipment at construction site by qualified factory trained technicians regularly employed by the equipment manufacturer.

1.26 RELOCATED/EQUIPMENT/ITEMS/

Not applicable.

1.27 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS EQUIPMENT

Not applicable.

1.28 CONSTRUCTION SIGN

A. Provide a Construction Sign where directed by the Resident Engineer. All wood members shall be of framing lumber. Cover sign frame with 0.7 mm (24 gage) galvanized sheet steel nailed securely around edges and on all bearings. Provide three 100 by 100 mm (4 inch by 4 inch) posts (or equivalent round posts) set 1200 mm (four feet) into ground. Set bottom of sign level at 900 mm (three feet) above ground and secure to posts with through bolts. Make posts full height of sign. Brace posts with 50 x 100 mm (two by four inch) material as directed.

B. Paint all surfaces of sign and posts two coats of white gloss paint. Border and letters shall be of black gloss paint, except project title which shall be blue gloss paint.

C. Maintain sign and remove it when directed by the Resident Engineer.

D. Detail Drawing of construction sign showing required legend and other characteristics of sign is shown on the drawings.

1.29 SAFETY SIGN

A. Provide a Safety Sign where directed by Resident Engineer. Face of sign shall be 19 mm (3/4 inch) thick exterior grade plywood. Provide two 100 mm by 100 mm (four by four inch) posts extending full height of sign and 900 mm (three feet) into ground. Set bottom of sign level at 1200 mm (four feet) above ground.

B. Paint all surfaces of Safety Sign and posts with one prime coat and two coats of white gloss paint. Letters and design shall be painted with gloss paint of colors noted.

C. Maintain sign and remove it when directed by Resident Engineer.

D. Detail Drawing Number 45 of safety sign showing required legend and other characteristics of sign is shown on the drawings.

E. Post the number of accident free days on a daily basis.

1.30 CONSTRUCTION DIGITAL IMAGES

A. During the construction period through completion, furnish Department of Veterans Affairs with **1000** views of digital images, including one color print of each view and one Compact Disc (CD) per visit containing those views taken on that visit. Digital views shall be taken of exterior and/or interior as selected and directed by Resident Engineer (RE). Each view shall be taken with a professional grade camera with minimum size of 6 megapixels (MP) and the images will be a minimum of 2272 x 1704

pixels for the 200x250mm (8x 10 inch) prints and 2592 x 1944 pixels for the 400x500 mm (16 x 20 inch) prints, as per these specifications:

1. Normally such images will be taken at monthly intervals. However, the Resident Engineer may also direct the taking of special digital images at any time prior to completion and acceptance of contract. If the number of trips to the site exceeds an average of one per month of the contract performance period then an adjustment in contract price will be made in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) of Section 00 72 00, GENERAL CONDITIONS.
2. Photos of the ground breaking, steel topping out and ribbon cutting shall be part of the cost of the 1000 views.
3. In event a greater or lesser number of images than specified above are required by the Resident Engineer, adjustment in contract price will be made in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).

B. Images shall be taken by a commercial photographer and must show distinctly, at as large a scale as possible, all parts of work embraced in the picture.

C. Prints shall be made on 200 x 250 mm (8 by 10 inch) regular-weight matte archival grade photographic paper and produced by a process with a minimum of 300 pixels per inch (PPI). Prints must be printed using the commercial RA4 process (inkjet prints will not be acceptable). Photographs shall have 200 x 200 mm (8 by 8 inch) full picture print with no margin on three sides and a 50 mm (2 inches) margin on the bottom for pre-typed self-adhesive identity label to be **added by the contractor**. It is required that the prints are professionally processed so the quality will meet or exceed that of the same size print made with a film camera. Prints must be shipped flat to the Resident Engineer.

E. Images on CD-ROM shall be recorded in JPEG format with a minimum of 24 bit color and no reduction in actual picture size. Compressed size of the file shall be no less than 80% or the original with no loss of information. File names shall contain the date the image was taken, the Project number and a unique sequential identifier. The CD-ROM shall also contain an index of all the images contained therein in either a TXT or Microsoft Word format.

F. In case any set of prints are not submitted within five days of date established by Resident Engineer for taking thereof, the Resident Engineer may have such images/photographs taken and cost of same will be deducted from any money due to the Contractor.

G. Interior Final Photos: After completion of all work in an area final interior photos will be taken. The camera must allow the colors to be as close as possible to the actual colors. View shall be taken after final completion of work and coordinated with Resident Engineer. The images shall be printed out and provided on a CD to the RE Office. A minimum of **50** photos shall be provided. Prints shall be made on 8 inch by 10 inch regular weight matte archival grade photographic paper and produced by a process with a minimum of 300 pixels per inch. Prints must be printed using the commercial RA4 process (inkjet prints are not acceptable). It is required that the prints are professionally processed.

1.31 FINAL ELEVATION DIGITAL IMAGES

A. A minimum of four (4) images of each elevation shall be taken with a minimum 6 MP camera, by a professional photographer with different settings to allow the Resident Engineer to select the image to be printed. All images are provided to the RE on a CD.

B. Photographs shall be taken upon completion, including landscaping. They shall be taken on a clear sunny day to obtain sufficient detail to show depth and to provide clear, sharp pictures. Pictures shall be 400 mm x 500 mm (16 by 20 inches), printed on regular weight paper, matte finish archival grade photographic paper and produced by a RA4 process from the digital image with a minimum 300 PPI. Identifying data shall be carried on label affixed to back of photograph without damage to photograph and shall be similar to that provided for final construction photographs.

C. Furnish six (6) 400 mm x 500 mm (16 by 20 inch) color prints of the following buildings constructed under this project (elevations as selected by the RE from the images taken above). Photographs shall be artistically composed showing full front elevations. All images shall become property of the Government. Each of the selected six prints shall be place in a frame with a minimum of 2 inches of appropriate matting as a border. Provide a selection of a minimum of 3 different frames from which the SRE will select one style to frame all six prints. Photographs with frames shall be delivered to the Resident Engineer in boxes suitable for shipping.

1. Research Office Building #30.

1.32 HISTORIC PRESERVATION

Where the Contractor or any of the Contractor's employees, prior to, or during the construction work, are advised of or discover any possible archeological, historical and/or cultural resources, the Contractor

shall immediately notify the Resident Engineer verbally, and then with a written follow up.

1.33 CONSTRUCTION MEETINGS

At a minimum, weekly construction meetings will be held at the project site – RE Office. Attendees shall include the REs, contracto9r's personnel and other entities concerned with current progress or involved in planning, coordination or performance of future activities. All participants at the meetings shall be familiar with the project and authorized to conclude matters relating to the work. If the RE determines that the meetings need to be held more frequently, the contractor shall oblige at no cost.

1.34 EXISTING BUILDING AIR INTAKES

The existing hospital buildings have multiple AHU and air intake locations where fresh air is brought into the buildings. The contractor must prevent exhaust, fumes, chemical odors, dust, etc. (as a result of their work), from entering the building. A plan of prevention (including charcoal filters, pre-filters and changes in work hours to accommodate down time for specific air intake locations)must be submitted to the RE Office for approval prior to the start of work.

1.35 MISCELLANOUS ITEMS

A. Parking – contractor and contractor's employees shall make their own arrangements for vehicle parking off-site.

B. Contractor Communications – at all times during the performance of this work, the contractor's Superintendent and Project manager shall be available via cell phone. Prior to the start of work, the contractor shall provide the RE with emergency contact information for contractor personnel.

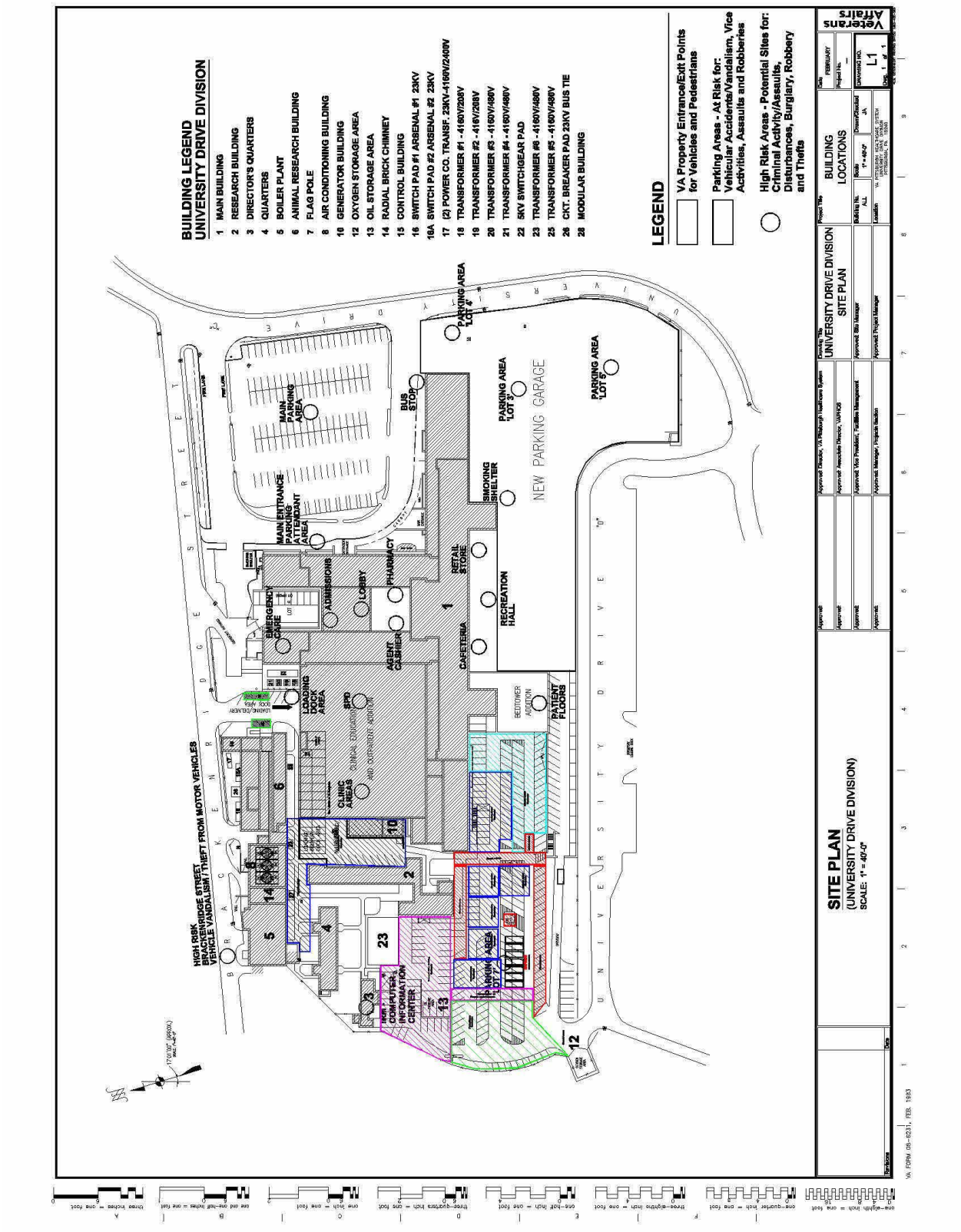
C. VA Owned Material and Equipment – use of VA/government owned material and equipment is prohibited.

D. Work Hours – Standard work hours for the VAMC are Monday – Friday, 7:00a to 3:30p. Coordinate after hour work requests with the RE.

E. Security – contractors shall wear/display VAMC issued badges when working within occupied buildings.

F. Delivery of Materials – contractor shall coordinate material and equipment deliveries to the project site. VA personne1 will not receive contractor deliveries.

ATTACHMENT A



- - - E N D - - -

SECTION 01 01 50
MEDICAL CENTER REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL INTENTION

A. This section pertains to medical center policy for construction projects performed at the VA Pittsburgh Healthcare System. Safety and health concerns are taken seriously. Both our staff and yours are expected to strictly adhere to the regulations and requirements. This is exceedingly important, since we must be primarily concerned for the safety of our patients. In this regard, OSHA Standards may protect worker safety and health, but they have minimal benefit for protecting the safety and health of our patients, due primarily to their differing medical conditions. Review this information as orientation with your personnel performing work on site. Where the requirements as outlined in this and section 01010 are differing, the more stringent shall apply.

1.2 REQUIREMENTS

A. Security and Work Hours:
   1. Secure all construction areas, especially mechanical and electrical rooms against entry of unauthorized individuals including patients.
   2. Notify the Project Engineer for permission to work after hours and weekends. Standard work hours for the medical center are Monday – Friday, 7:00 a.m. to 3:30 p.m.
   3. All contractors shall wear and display VA contractor badges provided by the PROJECT ENGINEER. For transient contractors, such as limited duration subcontracts, badges are not required, but must have some form of identifying the personnel as contractors, i.e., company issued id and a valid driver’s license.

B. Key Security:
   1. Only a limited number of keys will be issued to the contractor.
   2. If the Contractor loses a key, all areas that are keyed to that key will be rekeyed at the Contractor's expense at a charge of $50 per key and $50 per change, and all new keys required to be issued will be completed at the Contractor's expense.
   3. Ensure all doors leading to and from construction are locked to prevent access to the area from unauthorized persons.

C. General Safety:
   1. Follow all federal, state and local safety and health regulations.
   2. Maintain safety in the construction site/area in accordance with the provisions of the contract, which includes the OSHA Regulations,

National Electrical Codes, NFPA 70, National Electric Code and NFPA 101, Life Safety Code. Work in a safe manner and take all proper precautions while performing your work. Extra precautions shall be taken when working around persons occupying the building during construction.

3. Provide Personal Preventive Equipment (PPE) for your employees.
4. Post appropriate signs in specific hazardous areas.
5. Keep tools, ladders, etc. away from patients to prevent injuries.

D. Safety Inspections: The professional Occupational Safety & Health staff at this facility will perform Safety inspections of all contract operations. Written reports of unsafe practices or conditions will be reported to the RESIDENT ENGINEER and Contracting Officer for immediate attention and resolution.

E. Fire Alarms:

1. The fire alarm system connects all buildings at this facility, and is activated by various heat, duct, manual pull stations, and smoke sensors. Manual pull stations are provided at each entrance. Please survey the area in which you are working to locate the manual pull stations.
2. If in the event of a fire alarm sounding, you are to remain in your area, unless medical center personnel (Safety, Nursing or Engineering) instruct otherwise or unless a fire situation is in your area, in which case you should immediately evacuate.
3. Any work involving the fire protection systems will require written permission to proceed from the Project Engineer. DO NOT tamper with or otherwise disturb any fire alarm system components without prior written permission. To do so without written permission will result in an adverse action. A pull station must remain active through the entire project even if other fire alarm devices are asked to be deactivated.

F. Hazardous Materials:

1. Many of the operations you are scheduled to perform may involve the use of hazardous materials. Prior to bringing hazardous materials on site, all Material Safety Data Sheets will be submitted through the Project Engineer for evaluation by the facilities Industrial Hygienist/Safety Representative.
2. Storage of hazardous materials within buildings will be minimal with only enough on hand to perform daily work tasks. Flammable materials will either be removed from buildings at the end of the workshift or stored in approved flammable storage containers.
3. Care must be taken to assure adequate ventilation to remove vapors of

hazardous materials in use. Many of the patients being cared for in the facility are susceptible to environmental contaminants, even when odors seem minimal. You will isolate those areas where vapors are produced and ventilate to the most extent possible to reduce the number of complaints.

4. When chemicals become odorous, the Safety Office should be contacted immediately, i.e., adhesive remover used to remove glue, so employees in adjacent areas can be notified.

G. Contact with Asbestos Containing Materials:

1. Due to the age of our buildings, many contain asbestos containing materials (ACM). Primary ACM uses in the medical center includes floor tile, mastic, piping and HVAC insulation. The medical center has performed a comprehensive asbestos survey and has identified accessible ACM. Some areas contain damaged asbestos and should not be accessed without prior abatement.
2. The most common type of ACM insulation you may encounter includes thermal system insulation (TSI) and vinyl asbestos tile floor (VAT). ACM TSI is generally covered with a cloth wrap or lagging and the asbestos substrate generally appear white in color. DO NOT SAND, DRILL, GOUGE, OR OTHERWISE DISTURB THIS TYPE OF INSULATION. Contractors disturbing or releasing asbestos containing materials will be liable for all damages and cleanup costs.
3. Where disturbance of asbestos is likely, it has been addressed in the contract for removal. If contact with the presence of Asbestos Is Presented, STOP ALL WORK in the immediate area and immediately contact the Project Engineer and the Industrial Hygienist/Safety Office to make necessary arrangements for removal.
4. In some areas, asbestos insulation has been identified on elbows between fiberglass piping insulation as patching materials among the fiberglass insulation. Fiberglass insulation used in this facility is usually yellow or pink in color, wrapped either by cloth or paper lagging.
5. To protect and ensure all your employees are aware that asbestos containing materials have been used in the construction of this facility, you are required to have them review this section and complete the awareness statement included as Attachment A. Once this documentation has been signed by all employees, forward to the Project Engineer for documentation.
6. A complete assessment of asbestos materials and conditions are available for viewing by contacting the facilities Industrial Hygienist at 688-6000, extension 5704 or the Safety Representative at

Highland Drive at 412-365-4460. Prior to performing work above any ceiling or starting in a new area, consult with the Project Engineer concerning existing conditions of ACM.

7. Some of the areas in the facility are identified as restricted areas due to condition of ACM. These are readily labeled. DO NOT ENTER THESE AREAS unless first contacting the Project Engineer. Entry requirements to these areas are awareness of the hazards, proper protective clothing (coveralls and respirators), and personal monitoring in accordance with OSHA requirements.
8. Submit contractor asbestos awareness statements for all persons working on the site prior to commencing work.

H. Environmental Protection:

1. It may help you to be aware of the seriousness, which the environmental protection requirements of each contract are regarded. Adherence to these requirements is subject to continuing scrutiny from the community and backed by severe penalties, such as fines and incarceration. These environmental requirements will be strictly enforced.
2. NO hazardous materials will be disposed of on Government property during and after completion of the project. All waste will be hauled off-site or disposed of in contractor-owned and operated waste removal containers.
3. A copy of all waste manifests for special or hazardous wastes will be forwarded to the Project Engineer and the Industrial Hygienist. Environmental requirements will be strictly enforced.

I. Permit Required Confined Spaces:

1. Contractors performing work on this facility will follow all requirements outlined in OSHA Standards for working in confined spaces. There are numerous permits required confined spaces on this facility. These spaces have been identified as a confined space. Some spaces have been posted, but the majority have not due to their configuration.
2. Confined spaces are areas which are large enough to be entered, have limited egress/exit potential, and are not designed for permanent human occupancy. If you encounter any space which meets this definition, if it is a suspected confined space, please contact the Project Engineer and the Industrial Hygienist/Safety Office for a determination.
3. Contractors performing work in confined spaces are responsible for compliance with all applicable standards and regulations.

J. Housekeeping:

1. Protect patients and VA personnel in occupied areas from the hazards of dust, noise, construction debris and material associated with a construction environment. Keep work area clear, clean and free of loose debris, construction materials and partially installed work which would create a safety hazard or interfere with VA personnel duties and traffic.
2. Wet mop occupied areas clean and remove any accumulation of dust/debris from cutting or drilling from any surface at the end of each workday. Mops and buckets will not be provided.
3. Make every effort to keep dust and noise to a minimum at all times. Take special precautions to protect VA equipment from damage including excessive dust.
4. Maintain clear access to mechanical, electrical devices, equipment and main corridors. This will ensure access to existing systems in the event of an emergency.
5. Clean area of all construction debris and dust upon completion of demolition and/or renovation daily.
6. During construction operations, keep existing finishes protected from damage. Cover and protect all carpets during construction. Any carpets or surfaces damaged as a result of construction activities will be replaced at the contractor expense.

K. Hot Work Permits:

1. Any hot work operations including cutting, welding, thermal welding, brazing, soldering, grinding, thermal spraying, thawing pipes or any other similar activity, will require a Hot Work Permit to be obtained by the Contractor from the Safety Officer. The Contractor will be responsible for conforming to all Medical Center regulations, policies and procedures concerning Hot Work Permits as outlined below:
   a. Prior to the performance of hot work in patient-occupied buildings, a request for a Hot Work Permit will be made to the Safety Department.
   b. The Project Engineer will inspect the area and ensure that the requirements of NFPA 241 and OSHA standards have been satisfied. The Hot Work Permit will be granted and will be posted in the immediate area of the work.
   c. The Hot Work Permit will apply only to the location identified on the permit. If additional areas involve hot work, additional permits must be requested.
   d. Upon completion of all hot work, the Project Engineer will be notified by the responsible individual to perform a re-inspection of the area.

2. Do not use any of the extinguishers in the medical center for standby purpose while conducting hot
work. Contractors are required to supply their own Class ABC extinguishers. Medical center extinguishers are only to be used in the event of a fire.

L. Emergency Medical Services: Emergency medical services for stabilization purposes are available for contractors at this facility. For medical emergencies, dial 333 when inside any building. Report the nature of the emergency and location. The operator will dispatch in-house personnel or coordinate an outside emergency assistance based on the nature of the emergency.

M. Use of Government Owned Material and Equipment: Use of Government owned material and equipment is PROHIBITED. This includes flatbeds, etc. for delivery of materials.

N. Superintendent Communications: At all times during the performance of this contract, the Contractor's Superintendent is to be available by cell phone. At the beginning of the contract and prior to beginning any construction, supply the Project Engineer with the contact information for the superintendent.

O. Parking: Contractor and contractor's employees shall make their own arrangements for vehicle parking off-site.

P. Traffic:

1. Traffic hazards are minimal at this facility. Drivers should be particularly concerned with pedestrian traffic.
2. Seat belt use is mandatory on the station.
3. Federal police officers maintain a 24-hour patrol of the area.
4. No parking/driving on sidewalks and/or grass unless authorized.

Q. Smoking Policy: **NO SMOKING IS PERMITTED WITHIN THE BUILDINGS at any time** or in/near hazardous areas. Contractors are permitted to smoke in medical center staff designated areas only. Smoking inside a government building is subject to a monetary fine without warning.

R. Road Closures: For any work requiring closure of a road or parking lot, a request for closure will be made in writing at least 5 days in advance for approval by the Project Engineer and Fire Department. Contractor requiring road closures will complete a permit and forward to the Project Engineer for authorization by the Fire Department. Permits will be issued for no longer than one week. Multiple permits will authorize work lasting longer than one week. If work affects one lane of traffic, the contractor must review the plan and get approval from the Project Engineer prior to work starting. The contractor is responsible for all safety signage, barricades and flagmen.

S. Delivery of Materials: All materials to be delivered to VA Loading docks will be coordinated by the contractor. VA personnel will not receive any contractor materials and the contractor will meet all deliveries at the dock to ensure receipt, custody, and removal of items from the dock so not to impact hospital function. If contractor is not present on the site to receive materials in a timely manner, the delivery will be refused and sent away to free the dock space. Extension of construction time will not be granted for refusal to receive contractor materials.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

- - - END - - -

Attachment A

**CONTRACTOR/SUBCONTRACTOR/EMPLOYEE
NOTIFICATION OF ASBESTOS**

The department of veterans affairs medical center located in Allegheny County, Pittsburgh, Pennsylvania, was constructed during a period when asbestos was commonly used in building materials.

The VA Pittsburgh healthcare system (VAPHS) has completed a survey for asbestos. Most buildings contain some type of asbestos (i.e., steam lines, floor tiles, crawlspaces, etc.).

If you or your employee encounters suspected friable asbestos or conditions that may cause suspected asbestos to become friable, notify the Project Engineer or the industrial hygienist/safety office immediately.

When working in areas that are suspected of having asbestos, relocate employees and patients from the area until work is completed.

If there are any questions, please feel free to contact the Project Engineer at ext. 5706

Thank you for your assistance.

Please sign and date as acknowledgement of the above information.

Contractor/subcontractor employee signature:

Employee Name Contractor/Subcontractor
Date

Attachment B

PERMIT
FOR CUTTING AND WELDING
WITH PORTABLE GAS OR ARC EQUIPMENT

VA Project No: _____

Name of Contractor's Firm: _____

Date: _____

Building/Location: _____

Work To Be Done: _____

_____

_____

_____

_____

Any Special Precautions: _____

_____

_____

Fire Watch Required: ____Yes ____No

The location where the work is to be performed has been examined, necessary precautions have been taken, and permission is granted for this work.

Signed _____
(Safety Official Authorizing Hot Work)

Permit Expires: _____ (Date)

Time Hot Work Started: _____ Time Hot Work Completed: _____

FINAL CHECK-UP

Work area and all adjacent areas to which sparks and heat might have spread (including floors above and below and on opposite sides of walls) were inspected 30 minutes after the work was completed and were found firesafe.

Signed _____
(Contractor's Fire Watch)

ATTENTION

Before approving any cutting and welding permit, the contractor's authorized representative or their appointee shall inspect the work area and confirm that precautions have been taken to prevent fire in accordance with NFPA Standard No. 51B.

Interim Life Safety Measures/Precautions

- Sprinklers are in service where installed
- Cutting and welding equipment in good repair
- Within 10 meters (30 feet); floors swept clean of combustible, no combustible material or flammable liquids, all wall and floor openings covered, and covers suspended beneath work to collect sparks
- When working on enclosed equipment and in confined space, equipment and area is free of flammable vapors
- Fire watch provided during and 30 minutes after operation (60 minutes for torch applied roofing operations)
- Portable fire extinguisher with adequate rating available in the immediate vicinity
- Standpipe system in service where installed
- Protection of any sprinkler heads when hot work is in close proximity
- Smoking prohibited in immediate vicinity
- Non-combustible shields provided when hot work is done near combustible walls, partitions, floors, roofs
- Prohibition of hot work on pipes contacting combustible walls
- Personnel trained in use of equipment including portable fire extinguishers and sounding a fire alarm
- Final check-up conducted after 30 minutes

Attachment C

PERMIT
FOR ROAD CLOSURE

VA Project No: _____Date of Request:_____

Name of Contractor's Firm:

_____

Date(s) of Requested Closure_____Time(s) of Requested Closure:_____

Location Description:

_____

Work To Be Done:

_____

_____

_____

_____

Protection Required: (To be completed by the Project Engineer)

☐Solid barricade with flashing lights to guard excavation site
☐Warning cones and/or construction barrier tape
☐Construction fencing
☐Flag/attendant for directing traffic
☐Cover excavation site with steel sheet to permit traffic flow after administrative work hours.
☐Other (Describe)

THE PROJECT ENGINEER
CONCURRENCE:_____DATE_____

FIRE DEPARTMENT APPROVAL:_____DATE_____
(Fire Department Officer approving permit will contact on duty Police Officer to inform of closure)

Original copy to be maintained in the Safety Department until work is completed. Once completed, return original to the Project Engineer for filing.

Infection Control Risk Assessment
Matrix of Precautions for Construction & Renovation

Step 1: Using the following table, *identify* the type of Construction Project Activity (A-D)

Type A	**Inspection and Non-Invasive Activities** Includes, but is not limited to: • Removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet. • Painting (but not sanding) • Wallcovering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings or other than for visual inspection.
Type B	**Small scale, short duration activities which create minimal dust** Includes, but is not limited to: • Installation of telephone and computer cabling • Access to chase spaces • Cutting of walls or ceiling where dust migration can be controlled
Type C	**Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies** Includes, but is not limited to: • Sanding of walls for painting or wall covering • Removal of floor coverings, ceiling tiles and casework • New wall construction • Minor duct work or electrical work above ceilings • Major cabling activities • Any activity which cannot be completed within a single workshift
Type D	**Major demolition and construction projects** Includes, but is not limited to: • Activities which require consecutive work shifts • Requires heavy demolition or removal of a complete cabling system • New construction

Note: Reference: "www.icanprevent.com"

Step 2: Using the following table, *identify the* Patient Risk Groups that will be affected. If more than one risk group will be affected, select the higher risk group:

Low Risk	Medium Risk	High Risk	Highest Risk
• Office areas	• Cardiology • Echocardiography • Endoscopy • Nuclear Medicine • Physical Therapy • Radiology/MRI • Respiratory Therapy	• CCU • Emergency Room • Labor & Delivery • Laboratories (specimen) • Outpatient Surgery • Pharmacy • Post-Anesthesia Care Unit • Surgical Units	• Any area caring for immunocompromised patients • Burn Unit • Transplant Unit • Cardiac Cath Lab • Central Sterile Supply • Intensive Care Units • Medical Unit • Negative pressure isolation rooms • Oncology • Operating rooms

Step 3: Match the Patient Risk Group (low, medium, high, highest) with the planned **Construction Project Type** (A, B, C, D) on the IC Matrix to find the **Class of Precautions** (I, II, III, IV) or level of infection control activities required.

IC Matrix: Class of Precautions for Construction Projects by Patient Risk

Patient Risk Group	Type A	Type B	Type C	Type D
LOW Risk Group	I	II	II	III/IV
MEDIUM Risk Group	I	II	III	IV
HIGH Risk Group	I	II	III/IV	IV
HIGHEST Risk Group	II	III/IV	III/IV	IV

Note: Infection Control approval will be required when the Construction Activity and Risk Level indicates that **Class III** or **Class IV** control procedures are necessary. Coordinate with the Resident Engineer.

Description of Required Infection Control Precautions by Class

	During Construction Project	Upon Completion of Project
Class I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection.	1. Wipe work surfaces with disinfectant.
Class II	1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Place dust mat at entrance and exit of work area. 6. Remove or isolate HVAC system in areas where work is being performed.	1. Wipe work surfaces with disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Remove isolation of HVAC system in areas where work is being performed.
Class III	1. Remove or isolate HVAC system in areas where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheet rock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum or vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. 5. Cover transport receptacles or carts. Tape covering unless solid lid. 6. Wet mop area outside barrier with disinfectant daily or more often as directed by the Resident Engineer. 7. Use sticky mat on both sides of the entrance/exit door. Tear off pad at least once daily and more often as they become dirty or as directed by the Resident Engineer. 8. Post the ICRA Permit on the ICRA barrier (visible from the outside of the area).	1. Do not remove barriers from work area until completed project is inspected by the Resident Engineer and thoroughly cleaned/disinfected by the contractor 2. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department. 3. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 4. Vacuum work area with HEPA filtered vacuums. 5. Wet mop area with disinfectant. 6. Remove isolation of HVAC system in areas where work is being performed.

Class IV	1. Remove or isolate HVAC system in areas where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum or vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 6. All personnel entering work site area required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area. 7. Wet mop area outside barrier with disinfectant daily or more often as directed by the Resident Engineer. 8. Use sticky mat on both sides of the entrance/exit door. Tear off pad at least once daily and more often as they become dirty or as directed by the Resident Engineer. 9. Post the ICRA Permit on the ICRA barrier (visible from the outside of the area).	1. Do not remove barriers from work area until completed project is inspected by the Resident Engineer and thoroughly cleaned/disinfected by the contractor 2. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 3. Contain construction waste before transport in tightly covered containers. 4. Cover transport receptacles or carts. Tape covering unless solid lid. 5. Vacuum work area with HEPA filtered vacuums. 6. Wet mop area with disinfectant. 7. Remove isolation of HVAC system in areas where work is being performed.

Adapted with permission of Virginia Kennedy and Bonnie Barnard, St. Luke's Episcopal Hospital, Huston, TX, www.icanprevent.com.

Work Area Classifications for Research Office Building #30

3rd Floor Connection to B#1 = Class IV
Basement Connection to B#1 = Class IV

Infection Control Orientation

The goal of the Infection Control program is to identify and reduce the risks of acquiring and transmitting infections among patients, employees, physicians, and other licensed independent practitioners, contract service workers, volunteers, students, and visitors.

During construction, renovation and minor improvement projects, hidden infectious disease hazards may be released into the air, carried on dust particles or on clothing – for example, fungal organisms such as, *Aspergillus. Aspergillus* species may be found in decaying leaves and compost, plaster and drywall, and settled dust. These organisms usually do not cause problems in healthy people, but a hospital is full of sick patients! *Aspergillus* and other fungal organisms can cause illness and even death in transplant patients, cancer treatment patients, and patients with lung problems or poor immunity. Therefore, it is critical that you do your part to keep our patients, employees, and visitors as safe and healthy as possible. We, in turn, will make conditions as safe as possible for you.

1. Medical Waste:
   a. VAMC will remove any medical waste, including sharps containers (for used needles and syringes), from construction areas prior to the start of the projects.
   b. If you find any needles, syringes, sharp medical objects, please notify the Resident Engineer **IMMEDIATELY**.

2. Barrier Walls:
   a. The construction areas MUST be kept separated from patient care areas by barriers that keep the dust and dirt inside the worksite.
   b. The walls must provide a complete seal of the construction area from adjacent areas (walls may be rigid or 4 or 6 mil thickness noncombustible, flame retardant plastic) and from floor slab to deck above.

3. Environmental Control:
   a. Negative air pressure must be maintained within the construction area.
   b. Demolition debris is removed in tightly fitted covered carts – use specified traffic patterns.
   c. Sticky or walk-off mats are placed immediately outside the construction zone and changed whenever necessary to control the spread of dust and dirt.
   d. Exterior window seals are to be used to reduce the amount of outside excavation debris coming into the building.

e. If demolition chutes are used, they must be sealed when not in use; the chute and damper should be sprayed with water, as necessary to maintain dust control.
f. Control, collection and disposal must be provided for any drain liquid or sludge found when demolishing plumbing.

4. Traffic Control:
   a. Use designated entry and exit procedures.
   b. Keep all egress pathways free of debris.
   c. No unauthorized personnel should be allowed to enter construction areas.
   d. Use designated elevators only.

5. Cleaning:
   a. Keep the construction area clean on a daily basis as required.
   b. Dust and dirt **must** be kept to a minimum.

6. Workers:
   a. Clothing must be free of loose soil and debris when exiting the construction area.
   b. Use personal protective equipment (masks, face shields, etc.) as indicated for the task at hand.
   c. Hand washing is the best method of reducing the transmission of infection: always wash your hands with soap and water after visiting the restroom, before eating, when leaving the construction site.

Infection Control Construction Permit

Project Title: UD Research Office B#30 Permit No: **ROB #40 -**

Location of Construction: Work Start Date:

Project Coordinator: Estimated Duration:
Contractor Performing Work: Permit Expiration Date:
Supervisor: Telephone:

Work to be performed:

YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		TYPE A: Inspection, non-invasive activity.			GROUP 1: Low Risk
		TYPE B: Small scale, short duration, moderate to high levels; tel/data cable install; access to chases; minimal dust.			GROUP 2: Medium Risk
		TYPE C: Activity generates moderate to high levels of dust, requires more than one work shift for completion.			GROUP 3: Medium/High Risk
		TYPE D: Major duration and construction activities requiring consecutive work shifts.			GROUP 4: Highest Risk

Permit Classification: Class ___

Class I

1. Execute work by methods to minimize raising dust from construction operations.
2. Immediately replace any ceiling tile displaced for visual inspection.
3. Minor demolition for remodeling.

Class II

1. Provides active means to prevent air-borne dust from dispensing into atmosphere.
2. Water mist work surfaces to control dust while cutting.
3. Seal unused doors with duct tape.
4. Block off and seal air vents.
5. Wipe surfaces with disinfectant.
6. Contain construction waste before transport in tightly covered containers.
7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area.
8. Place dust mat at entrance and exit of work area.
9. Remove or isolate HVAC system in areas where work is being performed.

Class III

Date:
Initials:
Initials:
Initials:

1. Obtain infection control permit before construction begins.
2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system.
3. Complete all critical barriers or implement control cube method before construction begins.
4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.
5. Do not remove barriers from work area until complete project is inspected by RE and cleaned by contractor.
6. Vacuum work with HEPA filtered vacuums.
7. Wet mop with disinfectant.
8. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.
9. Contain construction waste before transport in tightly covered container.
10. Cover transport receptacles or carts. Tape covering.
11. Remove or isolate HVAC system in areas where work is being performed.

Class IV

Date:
Initials:
Initials:
Initials:

1. Obtain infection control permit before construction begins.
2. Isolate HVAC system in areas where work is being done to prevent contamination of duct systems.
3. Complete all critical barriers or implement control cube method before construction beings.
4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.
5. Seal holes, pipes, conduits, and punctures appropriately.
6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site ore they can wear cloth or paper coveralls that are removed each time they leave the work site.
7. All personnel entering work site are required to wear shoe covers.
8. Do not remove barriers from work area until completed project is thoroughly cleaned by the Environmental Services Department.
9. Vacuum work area with HEPA filtered vacuums.
10. Wet mop with disinfectant.
11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.
12. Contain construction waste before transport in tightly covered containers.
13. Cover transport receptacles or carts. Tape covering.
14. Remove or isolate HVAC system in areas where work is being done.

Resident Engineer Date

Infection Control Nurse Date

Contractor Date

SECTION 01 32 16.13
NETWORK ANALYSIS SCHEDULES

PART 1- GENERAL

1.1 DESCRIPTION:

A. The Contractor shall develop a Network Analysis System (NAS) plan and schedule demonstrating fulfillment of the contract requirements, shall keep the network up-to-date in accordance with the requirements of this section and shall utilize the plan for scheduling, coordinating and monitoring work under this contract (including all activities of subcontractors, equipment vendors and suppliers). Conventional Critical Path Method (CPM) Precedence Diagramming Method (PDM) technique will be utilized to satisfy both time and cost applications. All schedule data and reports required under this specification section shall be based upon regular total float, not relative total float schedules.

1.2 CONTRACTOR'S REPRESENTATIVE:

A. The Contractor shall designate an authorized representative in the firm who will be responsible for the preparation of the network diagram, review and report progress of the project with and to the Contracting Officer's representative.

B. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the requirements of this specification section and such authority shall not be interrupted throughout the duration of the project.

1.3 CONTRACTOR'S CONSULTANT

A. To prepare the network diagram, and compact disk(s), which reflects the Contractor's project plan, the Contractor shall engage an independent CPM consultant who is skilled in the time and cost application of scheduling using (PDM) network techniques for construction projects, the cost of which is included in the Contractor's bid. This consultant shall not have any financial or business ties to the Contractor, and shall not be an affiliate or subsidiary company of the Contractor, and shall not be employed by an affiliate or subsidiary company of the Contractor.

B. Prior to engaging a consultant, and within 10 calendar days after award of the contract, the Contractor shall submit to the Contracting Officer:

1. The name and address of the proposed consultant.
2. Sufficient information to show that the proposed consultant has the qualifications to meet the requirements specified in the preceding paragraph.
3. A list of prior construction projects, along with selected PDM network diagram samples on current projects which the proposed

consultant has performed complete project scheduling services. These network diagram samples must show complete project planning for a project of similar size and scope as covered under this contract.

C. The Contracting Officer has the right to approve or disapprove employment of the proposed consultant, and will notify the Contractor of the VA decision within seven calendar days from receipt of information. In case of disapproval, the Contractor shall resubmit another consultant within 10 calendar days for renewed consideration. The Contractor must have their CPM Consultant approved prior to submitting any diagram.

1.4 COMPUTER PRODUCED SCHEDULES

A. The contractor shall provide to the VA, Senior Resident Engineer and CPM Schedule Analyst, monthly computer processing of all computer-produced time/cost schedules and reports generated from monthly project updates. This monthly computer service will include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of Primavera (P6) to the contracting officer’s representative; a hard copy listing of all project schedule changes, and associated data, made at the update and an electronic file of this data in Primavera (P6) batch format; and the resulting monthly updated schedule in a compressed electronic file in Primavera (P6), (PDM) format. These must be submitted with and substantively support the contractor’s monthly payment request and the signed look ahead report. The resident engineer shall identify the five different report formats that the contractor shall provide based upon the monthly schedule updates.

B. The contractor is responsible for the correctness and timeliness of the computer-produced reports. The Contractor is also responsible for the accurate and timely submittal of the updated project schedule and all CPM data necessary to produce the computer reports and payment request that is specified.

C. The VA shall report errors in computer-produced reports to the Contractor’s representative within ten calendar days from receipt of reports. The Contractor will reprocess the computer-produced reports and associated compact disk(s), when requested by the Contracting Officer’s representative, to correct errors which affect the payment and schedule for the project.

1.5 THE COMPLETE PROJECT NETWORK DIAGRAM SUBMITTAL

A. Within 45 calendar days (60 calendar days on projects over $50,000,000) after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; three blue line copies of the complete network diagram on sheets of paper 765 x 1070 mm (30 x 42 inches) and an

electronic file in a compressed Primavera (P6), (PDM) format. The submittal shall also include three copies of a computer-produced activity/event ID schedule showing project duration; phase completion dates; and other data, including event cost. Each activity/event on the computer-produced schedule shall contain as a minimum, but not limited to, activity/event ID, duration, predecessor and successor relationships, trade code, area code, description, budget amount, early start date, early finish date, late start date, late finish date and total float. Work activity/event relationships shall be restricted to finish-to-start and start-to-start without lead or lag constraints. Activity/event date constraints, not required by the contract, will not be accepted unless submitted to and approved by the Contracting Officer. The contractor shall make a separate written detailed request to the Contracting Officer identifying these date constraints and secure the Contracting Officer’s written approval before incorporating them into the network diagram. The Contracting Officer’s separate approval of the network diagram shall not excuse the contractor of this requirement. Logic events (non-work) will be permitted where necessary to reflect proper logic among work events, but must have a zero duration. The complete working network diagram shall reflect the Contractor's approach to scheduling the complete project. The final network diagram in its original form shall contain no contract changes or delays which may have been incurred during the final network diagram development period and shall reflect the Contractors as bid schedule. These changes/delays shall be entered at the first update after the final network diagram has been approved. The Contractor should provide their requests for time and supporting time extension analysis for contract time as a result of contract changes/delays, after this update, and in accordance with Article, ADJUSTMENT OF CONTRACT COMPLETION.

B. Within 30 calendar days after receipt of the complete project network diagram, the Contracting Officer or his representative will do one or both of the following:
   1. Notify the Contractor concerning his actions, opinions, and objections.
   2. A meeting with the Contractor at or near the job site for joint review, correction or adjustment of the proposed plan will be scheduled if required. Within 14 calendar days after the joint review, the Contractor shall revise and shall submit three blue line copies of the revised network diagram, three copies of the revised computer-produced activity/event ID schedule and a revised electronic file as specified by the Contracting Officer. The revised submission

will be reviewed by the Contracting Officer and, if found to be as previously agreed upon, will be approved.

C. The approved baseline network diagram schedule and the corresponding computer-produced schedule(s) shall constitute the approved baseline schedule until subsequently revised in accordance with the requirements of this section.

D. The Complete Project Network Diagram will contain approximately 2,500 work activities/events.

1.6 WORK ACTIVITY/EVENT COST DATA

A. The Contractor shall cost load all work activities/events except procurement activities. The cost loading shall reflect the appropriate level of effort of the work activities/events. The cumulative amount of all cost loaded work activities/events (including alternates) shall equal the total contract price. Prorate overhead, profit and general conditions on all work activities/events for the entire project length. The contractor shall generate from this information cash flow curves indicating graphically the total percentage of work activity/event dollar value scheduled to be in place on early finish, late finish. These cash flow curves will be used by the Contracting Officer to assist him in determining approval or disapproval of the cost loading. In the event of disapproval, the Contractor shall revise and resubmit in accordance with Article, THE COMPLETE PROJECT NETWORK DIAGRAM SUBMITTAL. Negative work activity/event cost data will not be acceptable, except on VA issued contract changes.

B. The Contractor shall cost load work activities/events for guarantee period services, test, balance and adjust various systems in accordance with the provisions in the General Conditions, Article, PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS (VA GENERAL CONDITIONS).

C. In accordance with Article PERFORMANCE OF WORK BY THE CONTRACTOR in the Section 00 72 00, GENERAL CONDITIONS, the Contractor shall submit, simultaneously with the cost per work activity/event of the construction schedule required by this Section, a responsibility code for all activities/events (referred to as "branches" in the Section 00 72 00 GENERAL CONDITIONS) of the project for which the Contractor's forces will perform the work.

D. The Contractor shall cost load work activities/events for ASBESTOS ABATEMENT. The sum of asbestos abatement work activity/event costs shall equal the value of the asbestos bid item in the Contractor’s bid.

E. The Contractor shall cost load work activities/events for all BID ITEMS. The sum of the cost loading for each bid item work activities/events shall equal the value of the item in the Contractors' bid.

F. Work activities/events for Contractor bond shall have a trade code and area code of BOND.

1.7 NETWORK DIAGRAM REQUIREMENTS

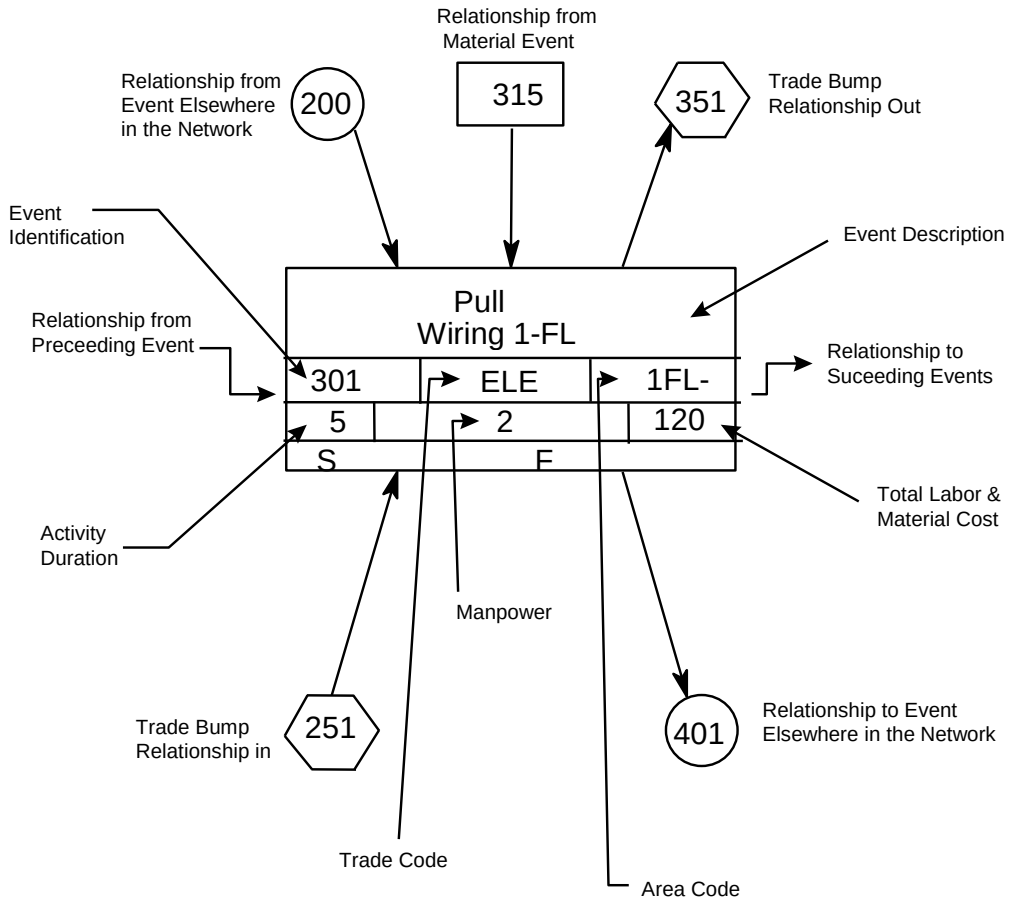
A. Show on the network diagram the sequence and interdependence of work activities/events required for complete performance of all items of work. In preparing the network diagram, the Contractor shall:

1. Exercise sufficient care to produce a clear, legible and accurate network diagram, refer to the drawing, CPM-1 (Sample CPM Network). Computer plotted network diagrams shall legibly display and plot all information required by the VA CPM activity/event legend or the computer plotted network diagram will not be acceptable. If the computer plotted network diagram is not found acceptable by the contracting officer's representative, then the network diagram will need to be hand drafted and meet legibility requirements. Group activities related to specific physical areas of the project, on the network diagram for ease of understanding and simplification. Provide a key plan on each network diagram sheet showing the project area associated with the work activities/events shown on that sheet.
2. Show the following on each work activity/event:
   a. Activity/Event ID number.
   b. Concise description of the work represented by the activity/event. (35 characters or less including spaces preferred).
   c. Performance responsibility or trade code (five alpha characters or less): GEN, MECH, ELEC, CARP, PLAST, or other acceptable abbreviations. Include this data (Trade & Manpower) in the resource code of P-6 Program for resource planning.
   d. Duration (in work days.)
   e. Cost (in accordance with Article, ACTIVITY/EVENT COST DATA of this section and less than $9,999,999 per activity).
   f. Work location or area code (five characters or less), descriptive of the area involved.
   g. Manpower required (average number of men per day). Include this data (Trade & Manpower) in the resource code of P-6 Program for resource planning.
   h. The SYMBOL LEGEND format shown below and on the drawing, CPM-1 (Sample CPM Network) is mandatory and shall be followed in

preparing final network diagrams.

SYMBOL LEGEND

Show Network Diagram page number location(s) for all incoming/outgoing node connector(s).



3. Show activities/events as:
   a. Contractor's time required for submittal of shop drawings, templates, fabrication, delivery and similar pre-construction work.
   b. Contracting Officer's and Architect-Engineer's review and approval of shop drawings, equipment schedules, samples, template, or similar items.
   c. Interruption of VA Medical Center utilities, delivery of Government furnished equipment, and rough-in drawings, project phasing and any other specification requirements.
   d. Test, balance and adjust various systems and pieces of equipment, maintenance and operation manuals, instructions and preventive maintenance tasks.

4. Show not only the activities/events for actual construction work for each trade category of the project, but also trade relationships to indicate the movement of trades from one area, floor, or building, to another area, floor, or building, for at least five trades who are performing major work under this contract.
5. Break up the work into activities/events of a duration no longer than 20 work days each, except as to non-construction activities/events (i.e., procurement of materials, delivery of equipment, concrete and asphalt curing) and any other activities/events for which the Contracting Officer may approve the showing of a longer duration. The duration for VA approval of any required submittal, shop drawing, or other submittals shall not be less than 20 work days. Refer to drawing CPM-1 for VA approval activities/events which will require minimum duration longer than 20 workdays. The construction time as determined by the CPM schedule from early start to late finish for any sub-phase, phase or the entire project shall not exceed the contract time(s) specified or shown.
6. Describe work activities/events clearly, so the work is readily identifiable for assessment of completion. Activities/events labeled "start," "continue," or "completion," are not specific and will not be allowed. Lead and lag time activities will not be acceptable.
7. Uniquely number each activity/event with numbers ranging from 1 to 99998 only. The network diagram should be generally numbered in such a way to reflect either discipline, phase or location of the work.

B. Submit the following supporting data in addition to the network diagram, activity/event ID schedule and electronic file (s). Failure of the Contractor to include this data will delay the review of the submittal until the Contracting Officer is in receipt of the missing data:
   1. The proposed number of working days per week.
   2. The holidays to be observed during the life of the contract (by day, month, and year).
   3. The planned number of shifts per day.
   4. The number of hours per shift.
   5. List the major construction equipment to be used on the site, describing how each piece relates to and will be used in support of the submitted network diagram work activities/events.
   6. Provide a typed, doubled spaced, description, at least one page in length, of the plan and your approach to constructing the project.

C. To the extent that the network diagram or any revised network diagram shows anything not jointly agreed upon, it shall not be deemed to have been approved by the Contracting Officer. Failure to include any element of work required for the performance of this contract shall not excuse the Contractor from completing all work required within any applicable completion date of each phase regardless of the Contracting Officer's approval of the network diagram.

D. Compact Disk Requirements and CPM Activity/Event Record Specifications: Submit to the VA (Senior resident Engineer and CPM Schedule Analyst) an electronic file(s) containing one file of the data required to produce a Primavera (P6), (PDM) produced schedule, reflecting all the activities/events of the complete project network diagram being submitted.

1.8 PAYMENT TO THE CONTRACTOR:

A. Monthly, the contractor shall submit the AIA application and certificate for payment documents G702 & G703 reflecting updated schedule activities and cost data in accordance with the provisions of the following Article, PAYMENT AND PROGRESS REPORTING, as the basis upon which progress payments will be made pursuant to Article, PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS of Section 00 72 00, GENERAL CONDITIONS. The Contractor is entitled to a monthly progress payment upon approval of estimates as determined from the currently approved updated computer-produced calendar-dated schedule unless, in special situations, the Contracting Officer permits an exception to this requirement. Monthly payment requests shall include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of Primavera (P6), (PDM) to the contracting officer’s representative; a listing of all project schedule changes, and associated data, made at the update; and an electronic file (s) of the resulting monthly updated schedule in a compressed Primavera (P6), (PDM) format. These must be submitted with and substantively support the contractor’s monthly application and certificate for payment request documents.

B. When the Contractor fails or refuses to furnish to the Contracting Officer the information and the associated updated Primavera (P6), (PDM) schedule in electronic format, which, in the sole judgment of the Contracting Officer, is necessary for processing the monthly progress payment, the Contractor shall not be deemed to have provided an estimate and supporting schedule data upon which progress payment may be made.

1.9 PAYMENT AND PROGRESS REPORTING

A. Monthly job site progress meetings shall be held on dates mutually agreed to by the Contracting Officer (or Contracting Officer's representative) and the Contractor. Contractor and the CPM consultant will be required to attend all monthly progress meetings. Presence of Subcontractors during progress meeting is optional unless required by the Contracting Officer (or Contracting Officer's representative). The Contractor shall update the project schedule and all other data required by this section shall be accurately filled in and completed prior to the monthly progress meeting. The Contractor shall provide this information to the Contracting Officer or the VA representative in completed form three work days in advance of the progress meeting. Job progress will be reviewed to verify:

1. Actual start and/or finish dates for updated/completed activities/events.
2. Remaining duration, required to complete each activity/event started, or scheduled to start, but not completed.
3. Logic, time and cost data for change orders, and supplemental agreements that are to be incorporated into the network diagram and computer-produced schedules. Changes in activity/event sequence and duration which have been made pursuant to the provisions of following Article, ADJUSTMENT OF CONTRACT COMPLETION.
4. Percentage for completed and partially completed activities/events.
5. Logic and duration revisions required by this section of the specifications.
6. Activity/event duration and percent complete shall be updated independently.

B. The Contractor shall submit a narrative report as a part of his monthly review and update, in a form agreed upon by the Contractor and the Contracting Officer. The narrative report shall include a description of problem areas; current and anticipated delaying factors and their estimated impact on performance of other activities/events and completion dates; and an explanation of corrective action taken or proposed. This report is in addition to the daily reports pursuant to the provisions of Article, DAILY REPORT OF WORKERS AND MATERIALS in the GENERAL CONDITIONS.

C. After completion of the joint review and the Contracting Officer's approval of all entries, the contractor will generate an updated computer-produced calendar-dated schedule and supply the Contracting Officer’s representative with reports in accordance with the Article, COMPUTER PRODUCED SCHEDULES, specified. The Contractor shall also send

an e-file copy of the P-6 data to the VA promptly after each monthly update.

D. After completing the monthly schedule update, the contractor's scheduling consultant shall rerun all current period contract change(s) against the prior approved monthly project schedule. The analysis shall only include original workday durations and schedule logic agreed upon by the contractor and resident engineer for the contract change(s). When there is a disagreement on logic and/or durations, the consultant shall use the schedule logic and/or durations provided and approved by the resident engineer. After each rerun update, the resulting electronic project schedule data file shall be appropriately identified and submitted to the VA in accordance to the requirements listed in articles 1.4 and 1.7. This electronic submission is separate from the regular monthly project schedule update requirements and shall be submitted to the resident engineer within fourteen (14) calendar days of completing the regular schedule update. Before inserting the contract changes durations, care must be taken to ensure that only the original durations will be used for the analysis, not the reported durations after progress. In addition, once the final network diagram is approved, the contractor must recreate all manual progress payment updates on this approved network diagram and associated reruns for contract changes in each of these update periods as outlined above for regular update periods. This will require detailed record keeping for each of the manual progress payment updates.

E. After VA acceptance and approval of the final network diagram, and after each monthly update, the contractor shall submit to the Contracting Officer three blue line copies of a revised complete network diagram showing all completed and partially completed activities/events, contract changes and logic changes made on the intervening updates or at the first update on the final diagram. The Contracting Officer may elect to have the contractor do this on a less frequent basis, but it shall be done on a quarterly basis as a minimum.

F. Following approval of the CPM schedule, the VA, the General Contractor, its approved CPM Consultant, RE office representatives, and all subcontractors needed, as determined by the SRE, shall meet to discuss the monthly updated schedule. The main emphasis shall be to address work activities to avoid slippage of project schedule and to identify any necessary actions required to maintain project schedule during the reporting period. The Government representatives and the Contractor should conclude the meeting with a clear understanding of those work and administrative actions necessary to maintain project schedule status

during the reporting period. This schedule coordination meeting will occur after each monthly project schedule update meeting utilizing the resulting schedule reports from that schedule update. If the project is behind schedule, discussions should include ways to prevent further slippage as well as ways to improve the project schedule status, when appropriate.

1.10 RESPONSIBILITY FOR COMPLETION

A. Whenever it becomes apparent from the current monthly progress review meeting or the monthly computer-produced calendar-dated schedule that phasing or contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:
   1. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of work.
   2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of work.
   3. Reschedule the work in conformance with the specification requirements.

B. Prior to proceeding with any of the above actions, the Contractor shall notify and obtain approval from the Contracting Officer for the proposed schedule changes. If such actions are approved, the CPM revisions shall be incorporated by the Contractor into the network diagram before the next update, at no additional cost to the Government.

1.11 CHANGES TO NETWORK DIAGRAM AND SCHEDULE

A. Within 30 calendar days after VA acceptance and approval of any updated computer-produced schedule, the Contractor will submit a revised network diagram, the associated compact disk(s), and a list of any activity/event changes including predecessors and successors for any of the following reasons:
   1. Delay in completion of any activity/event or group of activities/events, indicate an extension of the project completion by 20 working days or 10 percent of the remaining project duration, whichever is less. Such delays which may be involved with contract changes, strikes, unusual weather, and other delays will not relieve the Contractor from the requirements specified unless the conditions are shown on the CPM as the direct cause for delaying the project beyond the acceptable limits.
   2. Delays in submittals, or deliveries, or work stoppage are encountered which make rescheduling of the work necessary.
   3. The schedule does not represent the actual prosecution and progress of the project.

4. When there is, or has been, a substantial revision to the activity/event costs of the network diagram regardless of the cause for these revisions.

B. CPM revisions made under this paragraph which affect the previously approved computer-produced schedules for Government furnished equipment, vacating of areas by the VA Medical Center, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, must be furnished in writing to the Contracting Officer for approval.

C. Contracting Officer's approval for the revised network diagram and all relevant data is contingent upon compliance with all other paragraphs of this section and any other previous agreements by the Contracting Officer or the VA representative.

D. The cost of revisions to the network diagram resulting from contract changes will be included in the proposal for changes in work as specified in Article, CHANGES of the Section 00 72 00 GENERAL CONDITIONS, and will be based on the complexity of the revision or contract change, man hours expended in analyzing the change, and the total cost of the change.

E. The cost of revisions to the network diagram not resulting from contract changes is the responsibility of the Contractor.

1.12 ADJUSTMENT OF CONTRACT COMPLETION

A. The contract completion time will be adjusted only for causes specified in this contract. Request for an extension of the contract completion date by the Contractor shall be supported with a justification, CPM data and supporting evidence as the Contracting Officer may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof based on revised activity/event logic, durations (in work days) and costs is obligatory to any approvals. The schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved in this request. The Contracting Officer's determination as to the total number of days of contract extension will be based upon the current computer-produced calendar-dated schedule for the time period in question and all other relevant information.

B. Actual delays in activities/events which, according to the computer-produced calendar-dated schedule, do not affect the extended and predicted contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The Contracting Officer will within a reasonable time

after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the Contracting Officer's decision.

C. The Contractor shall submit each request for a change in the contract completion date to the Contracting Officer in accordance with the provisions specified under Article, CHANGES, in the Section 00 72 00, GENERAL CONDITIONS. The Contractor shall include, as a part of each change order proposal, a sketch showing all CPM logic revisions, duration (in work days) changes, and cost changes, for work in question and its relationship to other activities on the approved network diagram.

D. All delays due to non-work activities/events such as RFI's, WEATHER, STRIKES, and similar non-work activities/events shall be analyzed on a month by month basis.

1.13 CONSTRUCTION SCHEDULE RISK ANALYSIS / MITIGATION PLAN

A. Schedule Risk Analysis – The Contractor shall conduct the statistical schedule risk analysis based on the above detailed construction activities in the Day 1 approved diagram, identifying major schedule risk areas and recommend risk mitigation plans as outlined below.

B. The risk analysis shall be conducted by a person or firm skilled in the statistical method of schedule risk analysis based on the (PDM) network techniques for major construction projects, preferably in the major health care related projects. The cost of this service shall be included in the Contractor's proposal.
Please submit the name and qualifications of the person or firm within 30 CD and contract award for VA approval.

C. The Contracting Officer has the right to approve or disapprove the person or firm designated to perform the risk analysis. In case of disapproval, the Contractor shall submit another qualified name or firm within 10 calendar days.

1.14 RISK ANALYSIS FORMAT / REQUIREMENTS / SUBMITTALS

A. Risk Analysis Software / Format – Within 45 calendar days (60 calendar days on projects over $50,000,000) after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review, a Risk Analysis software to be utilized, the method of performing the analysis, the format of presenting the data and the reports for VA approval.

B. Conduct Risk Analysis / Submittals – Based on the approved software / format, the consultant shall perform statistical risk analysis on the detailed approved Day 1 diagram. The Contractor shall review and utilize any previous Risk Analysis performed by the A/E of record based on the "semi-detailed" (yet at an overall level) construction logic and

schedule to ensure the continuity of previous schedule risk analysis. The Contractor's project manager and Superintendent shall identify the major schedule risk areas and possible risk mitigation strategy/plan and record it in a narrative format, with electronic file submission to the VA. The risk analysis exercise shall be performed or updated at least on a quarterly basis or as directed by the VA Contracting Officer.

C. The submittal shall include three copies of a computer-produced risk analysis results, predicting the various meaningful probability curves of achieving the contract schedules. It shall also include a detailed narrative list of all major and minor potential and specific schedule and cost risk areas, and a contractor's recommendation of mitigating the identified risks which must be addressed by the VA Project and Resident Engineer teams to maintain the contract schedule.

- - E N D - - -

SECTION 01 33 23
SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in GENERAL CONDITIONS.

1. Coordinate requirements of this Section with: Section 01·33·33 - Environmental Submittals.
2. Coordinate requirements of this Section with: Section 01·81·13 - Sustainable Design Requirements.
3. Coordinate requirements of this Section with: Section 01·81·19 - Indoor Air Quality Requirements.
4. Division 02 through 34: Individual sections for LEED requirements specific to the work of each of these Sections. Requirements may or may not include reference to LEED.

1.2 SUBMITTALS

A. For the purposes of this contract, samples (including laboratory samples to be tested), test reports, certificates, and manufacturers' literature and data shall also be subject to the previously referenced requirements. The following text refers to all items collectively as SUBMITTALS.

B. Submit for approval, all of the items specifically mentioned under the separate sections of the specification, with information sufficient to evidence full compliance with contract requirements. Materials, fabricated articles and the like to be installed in permanent work shall equal those of approved submittals. After an item has been approved, no change in brand or make will be permitted unless:

1 Satisfactory written evidence is presented to, and approved by Contracting Officer, that manufacturer cannot make scheduled delivery of approved item or;
2. Item delivered has been rejected and substitution of a suitable item is an urgent necessity or;
3. Other conditions become apparent which indicates approval of such substitute item to be in best interest of the Government.

C. Forward submittals in sufficient time to permit proper consideration and approval action by Government. Time submission to assure adequate lead time for procurement of contract - required items. Delays attributable

to untimely and rejected submittals (including any laboratory samples to be tested) will not serve as a basis for extending contract time for completion.

D. Submittals will be reviewed for compliance with contract requirements by Architect-Engineer, and action thereon will be taken by Resident Engineer on behalf of the Contracting Officer.

E. Upon receipt of submittals, Architect-Engineer will assign a file number thereto. Contractor, in any subsequent correspondence, shall refer to this file and identification number to expedite replies relative to previously approved or disapproved submittals.

F. The Government reserves the right to require additional submittals, whether or not particularly mentioned in this contract. If additional submittals beyond those required by the contract are furnished pursuant to request therefor by Contracting Officer, adjustment in contract price and time will be made in accordance with Articles titled CHANGES (FAR 52.243-4) and CHANGES - SUPPLEMENT (VAAR 852.236-88) of the GENERAL CONDITIONS.

G. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs and Architect-Engineer. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer and Architect- Engineer assumes no responsibility for checking schedules or layout drawings for exact sizes, exact numbers and detailed positioning of items.

H. Submittals must be submitted by Contractor only and shipped prepaid. Contracting Officer assumes no responsibility for checking quantities or exact numbers included in such submittals.

1. Submit samples required by Section 09 06 00, SCHEDULE FOR FINISHES, in quadruplicate. Submit other samples in single units unless otherwise specified. Submit shop drawings, schedules, manufacturers' literature and data, and certificates in quadruplicate, except where a greater number is specified.
2. Submittals will receive consideration only when covered by a transmittal letter signed by Contractor. Letter shall be sent via first class mail and shall contain the list of items, name of Medical Center, name of Contractor, contract number, applicable specification paragraph numbers, applicable drawing numbers (and other information required for exact identification of location for each item), manufacturer and brand, ASTM or Federal Specification Number (if any) and such additional information as may be required by specifications

for particular item being furnished. In addition, catalogs shall be marked to indicate specific items submitted for approval.

a. A copy of letter must be enclosed with items, and any items received without identification letter will be considered "unclaimed goods" and held for a limited time only.
b. Each sample, certificate, manufacturers' literature and data shall be labeled to indicate the name and location of the Medical Center , name of Contractor, manufacturer, brand, contract number and ASTM or Federal Specification Number as applicable and location(s) on project.
c. Required certificates shall be signed by an authorized representative of manufacturer or supplier of material, and by Contractor.

3. In addition to complying with the applicable requirements specified in preceding Article 1.9, samples which are required to have Laboratory Tests (those preceded by symbol "LT" under the separate sections of the specification shall be tested, at the expense of Contractor, in a commercial laboratory approved by Contracting Officer.
   a. Laboratory shall furnish Contracting Officer with a certificate stating that it is fully equipped and qualified to perform intended work, is fully acquainted with specification requirements and intended use of materials and is an independent establishment in no way connected with organization of Contractor or with manufacturer or supplier of materials to be tested.
   b. Certificates shall also set forth a list of comparable projects upon which laboratory has performed similar functions during past five years.
   c. Samples and laboratory tests shall be sent directly to approved commercial testing laboratory.
   d. Contractor shall send a copy of transmittal letter to both Resident Engineer and to Architect-Engineer simultaneously with submission of material to a commercial testing laboratory.
   e. Laboratory test reports shall be sent directly to Resident Engineer for appropriate action.
   f. Laboratory reports shall list contract specification test requirements and a comparative list of the laboratory test results. When tests show that the material meets specification requirements, the laboratory shall so certify on test report.

g. Laboratory test reports shall also include a recommendation for approval or disapproval of tested item.

4. If submittal samples have been disapproved, resubmit new samples as soon as possible after notification of disapproval. Such new samples shall be marked "Resubmitted Sample" in addition to containing other previously specified information required on label and in transmittal letter.
   a. On resubmittals, the Contractor shall highlight the changed items to call attention to changes from the previous submittal. Do not resubmit “approved as noted” submittals unless such resubmittal was specifically requested by the A-E. Additionally, clearly indicate in writing, or on resubmittals, all revisions other than those requested by A-E on previous submittal.
5. Approved samples will be kept on file by the Resident Engineer at the site until completion of contract, at which time such samples will be delivered to Contractor as Contractor's property. Where noted in technical sections of specifications, approved samples in good condition may be used in their proper locations in contract work. At completion of contract, samples that are not approved will be returned to Contractor only upon request and at Contractor's expense. Such request should be made prior to completion of the contract. Disapproved samples that are not requested for return by Contractor will be discarded after completion of contract.
6. Submittal drawings (shop, erection or setting drawings) and schedules, required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check.
   a. For each drawing required, submit one legible photographic paper or vellum reproducible.
   b. Reproducible shall be full size.
   c. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.
   d. A space 120 mm by 125 mm (4-3/4 by 5 inches) shall be reserved on each drawing to accommodate approval or disapproval stamp.
   e. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.

f. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.

g. When work is directly related and involves more than one trade, shop drawings shall be submitted to Architect-Engineer under one cover.

I. Samples, shop drawings, test reports, certificates and manufacturers' literature and data, shall be submitted for approval to:
Anne Beswick, RA
227 Fort Pitt Boulevard
Pittsburgh, PA 15222

J. At the time of transmittal to the Architect-Engineer, the Contractor shall also send a copy of the complete submittal directly to the Resident Engineer.

- - - E N D - - -

SECTION 01 33 33
ENVIRONMENTAL SUBMITTALS

PART 1 GENERAL

1.1 DESCRIPTION

A. This section is an overview of the special environmental submittal requirements of the project. It is the goal of this project to construct a "green" building that meets the US Green Building Council's LEED-NC Green Building Rating System Version 2.2 with a certification goal of LEED Silver Certification.

1.2 RELATED WORK

A. Coordinate requirements of this Section with: Section 01·33·23 – Shop Drawings, Product Data, and Samples.

B. Coordinate requirements of this Section with: Section 01·81·13 – Sustainable Design Requirements.

C. Coordinate requirements of this Section with: Section 01·81·19 – Indoor Air Quality Requirements.

D. Division 02 through 34: Individual sections for LEED requirements specific to the work of each of these sections. Requirements may or may not include reference to LEED.

1.3 ENVIRONMENTAL SUBMITTAL DEFINITIONS AND CRITERIA

A. Resource Efficient Product Data Submittal Criteria:

1. Environmental Issues Data: Includes manufacturer's certifications, verifying information, and test data, where specification Sections require data relating to environmental issues including but limited to:

a. Project Recyclability: Submit information to assist Resident Engineer and Contractor in recycling materials involved in shipping, handling, and delivery, and for temporary materials necessary for installation of products.

b. Recycled Content: Submit information regarding product post-industrial and post-consumer recycled content.

c. Product Recyclability: Submit information regarding product and product's components recyclability including potential sources accepting recycled materials.

d. Provide certification for all wood products provided by a Forest Stewardship Council (FSC)accredited certifier.

e. Provide final certification of well managed forest of origin to provide final documentation of certified sustainability harvested status: Acceptable wood "certified sustainably harvested" certifications shall include:

1) Wood suppliers' certificate issued by one of the Forest Stewardship Council (http://www.fscoax.org/principal.htm) accredited certifying agencies, such as the Smart Wood Program (www.smarftwood.org) or Scientific Certification Systems (www.scsl.com).
2) Suppliers invoice detailing the quantities of certified wood products for project.
3) Letter from a certifying agency corroborating that the products on the wood supplier's invoice originate from certified well-managed forests.

B. Indoor Air Quality Data Submittal Criteria:
1. Indoor Air Quality (IAQ) Environmental Testing Data: Submit emissions test data produced by acceptable testing laboratory listed in Quality Assurance Article for materials as required in each specific specification section.
a. Laboratory reports shall contain emissions test data on VOCs including total VOCs (TVOC), specific individual VOCs, formaldehyde and other aldehydes.
b. In special cases it may be necessary to identify other specific chemical for listing based on known quantity present or on known odor, irritation or toxicity.
c. Identify all VOCs emitted by each material as required in these specifications.
d. Specific test conditions and requirements are set forth in this Project Manual. For required tests, submit documentation of sample acquisition, handling, and test specimen preparation, as well as test conditions, methods, and procedures. General test requirements include:
1) Tests consist of a ten-day conditioning period followed by a 96 hour test period.
2) Samples collected during the test period at 24, 48, and 96 hours shall be analyzed for TVOC and formaldehyde.
3) VOC samples collected at 96 hours shall be identified and quantified for all compounds that are Chemicals of Concern on lists identified in this Project Manual.
2. Cleaning and Maintenance Products: Provide data on manufacturers' recommended maintenance, cleaning, refinishing and disposal procedures for materials and products. These procedures are for final Contractor cleaning of the project prior to substantial

completion and for provided materials and products as required by the specific specification sections.

C. Environmental Issues Certifications:
   1. Includes documentation certifying accuracy of post-industrial and post-consumer recycled content, and recyclability of product.
   2. Prior to Final Completion, submit certificate signed by corporate office holder (Chairman of the Board, President, Vice President, Secretary, or similar position of authority)of contractor, subcontractor, supplier, vendor, installer or manufacturer, provided they are primarily responsible for manufacture of product, including:
      a. Post-industrial and post-consumer recycled content of materials installed are same as those required by Project requirements.
      b. Product recyclability of materials installed are same as those required by Project requirements.
      c. Indoor air quality requirements: Certification shall state products and materials provided are essentially the same, and contain essentially the same components as products and materials tested.

D. Environmental Closeout Submittals: Includes data relating to environmental issues, and environmental product certifications.

1.4 ENVIRONMENTAL SUBMITTALS (REQUIRED UNDER THIS SECTION):

A. General: Comply with additional environmental submittal requirements included in other sections of the Specifications.

B. Environmental submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated environmental and LEED requirements.

C. Project Materials Cost Data: At close of Project, provide statement indicating total cost for building materials used for Project. Include statement indicating total cost of mechanical and electrical components.

D. Environmental Action Plans: Provide preliminary submittals within 14 days of date established for the Notice to Proceed indicating how the following requirements will be met.
   1. LEED Credit MR 2.1 and 2.2, Construction Waste Management, Recycled Construction Waste: Waste management plan to comply with the goal of recycling or salvaging at least 75% of the non-hazardous construction and demolition debris. Plan should identify materials to be diverted from a landfill, whether waste will be sorted on-site or commingled, and identify recyclers or hauler.

2. LEED Credit MR 3.1 and 3.2, Resource Reuse: List of proposed salvaged and refurbished materials.
   a. Identify each material that will be salvaged or refurbished, its source, and cost.
3. LEED Credit MR 4.1 and 4.2, Recycled Content: List of proposed materials with recycled content.
   a. Indicate cost, post-consumer and pre-consumer (post-industrial)recycled content for each product having recycled content.
4. LEED Credit 5.1 and 5.2, Local/Regional Materials: List of proposed regionally manufactured materials [and regionally extracted, harvested, or recovered materials].
   a. Identify each regionally manufactured material, its source, and cost.
   b. Identify each regionally extracted, harvested or recovered material, its source, and cost.
5. LEED Credit MR 7.0, Certified Wood: List of proposed certified wood products.
   a. Indicate each product containing certified wood, its source, and cost.
   b. Include statement indicating total cost for wood-based materials used for Project, including non-rented temporary construction.
6. LEED Credit EQ 3.1, Construction IAQ Management Plan: Construction indoor air quality (IAQ) management plan to meet the SMACNA IAQ Guideline for Occupied Buildings under Construction criteria.

E. Environmental Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with environmental action plan for the following:
   1. LEED Credit MR 2.1 and 2.2, Construction Waste Management: Waste reduction progress reports. Include separate report for demolition and construction waste. Include the following information:
      a. Material category.
      b. Generation point of waste.
      c. Total quantity of waste in tons.
      d. Quantity of waste salvaged, both estimated and actual in tons.
      e. Quantity of waste recycled, both estimated and actual in tons.
      f. Total quantity of waste recovered (salvaged plus recycled) in tons.
      g. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

2. LEED Credit MR 3.1 and 3.2, Resource Reuse: Salvaged and refurbished materials.
3. LEED Credit MR 4.1 and 4.2, Recycled Content: Recycled content.
4. LEED Credit MR 5.1 AND 5.2, Local/Regional Materials: Materials that are both regionally manufactured and regionally harvested or extracted.

1.5 ENVIRONMENTAL DOCUMENTATION SUBMITTALS

(REQUIRED IN DIVISIONS 02 THROUGH 34)

A. Environmental Documentation Submittals:
1. LEED Credit SS 7.1, Reduce Heat Islands: Product Data for paving materials indicating Solar Reflectance Index (SRI).
2. LEED Credit SS 7.2, Reduce Heat Islands: Product Data for roofing materials indicating Energy Star Compliance and Solar Reflectance Index (SRI).
3. LEED Credit SS 8.0, Light Pollution Reduction: Product Data for interior and exterior lighting fixtures that stop direct-beam illumination from leaving the building site.
4. LEED Credit WE 3.1 and 3.2, Water Use Reduction: Product Data for plumbing fixtures indicating water consumption.
5. LEED Prerequisite EA 3.0, CFC Reduction in HVAC&R Equipment: Product Data for new HVAC equipment indicating absence of CFC refrigerants.
6. LEED Credit EA 4.0, Enhanced Refrigerant Management: Product Data for new HVAC equipment indicating refrigerant type and charge (lb/ton), and for clean-agent fire extinguishing systems indicating absence of CFCs, HCFC and Halon.
7. LEED Credit MR 2.1 and 2.2,Construction Waste Management:
   a. Construction Waste Management Plan.
   b. Records of Donations or Sales: Indicate receipt and acceptance of salvageable waste donated or sold to individuals and organizations. Indicate whether organization is tax exempt.
   c. Recycling and Processing Facility Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
   d. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
8. LEED Credit MR 4.1 and 4.2, Recycled Content: Product Data and certification letter indicating percentages by weight of post-

consumer and pre-consumer (post-industrial-recycled content for products having recycled content). Include statement indicating costs for each product having recycled content.

9. LEED Credit MR 5.1 and 5.2, Local/Regional Materials: Product Data indicating location of material manufacturer for regionally manufactured and harvested materials.
   a. Include statement indicating cost and distance from manufacturer to Project for each regionally manufactured material.
   b. Include statement indicating cost and distance from point of extraction, harvest, or recovery to Project for each raw material used in regionally manufactured materials.
10. LEED Credit MR 6.0, Rapidly Renewable Materials: Product data for rapidly renewable materials.
   a. Include statement indicating costs for each rapidly renewable material.
11. LEED Credit MR 7.0, Certified Wood: Product Data and certificates of chain-of-custody for products containing certified wood.
   a. Include statement indicating costs for each product containing certified wood.
   b. Include statement indicating total cost for wood-based materials used for Project, including non-rented temporary construction.
12. LEED Credit EQ 1, Outdoor Air Delivery Monitoring: Product Data for carbon dioxide monitoring system and outdoor air monitoring products.
13. LEED Credit EQ 3.1, Construction IAG Management Plan, During Construction:
   a. Construction indoor air quality management plan.
   b. Product Data for temporary filtration media.
   c. Construction Documentation: Six photographs at three different occasions during construction along with a brief description of the SMACNA approach employed, documenting implementation of the IAQ management measures, such as protection of ducts and on-site stored or installed absorptive materials.
14. LEED Credit EQ 3.2, Construction IAQ Management Plan, Before Construction:
   a. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
   b. Product Data for filtration media used during flush-out and during occupancy.

c. If air testing used instead of a prescribed building flush-out, provide report from testing and inspecting agency indicating results of IAQ testing and documentation showing conformance with IAQ testing procedures and requirements.

15. LEED Credit EQ 4.1, Low-Emitting Materials, Adhesives and Sealants: Product Data and Material Safety Data Sheets (MSDSs) for adhesive and sealant used on the interior of the building indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA method 24).
16. LEED Credit EQ 4.2, Low-Emitting Materials, Paints and Coatings: Product Data and material safety data sheets (MSDSs) for paints and coating used on the interior of the building indicating chemical composition and VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA method 24).
17. LEED Credit EQ 4.3, Low-Emitting Materials, Carpet: Product Data for carpet products indicating VOC content of each product used.
18. LEED Credit EQ 4.4, Low-Emitting Materials, Composite Wood and Agrifiber Products: Product Data for composite wood and agrifiber products indicating that products contain no urea-formaldehyde resin.
    a. Include statement indicating adhesives and binder used for each product.
19. LEED Credit EQ 5, Indoor Chemical & Pollutant Source Control: Product Data indicating MERV 13 filters installed on all air handling units.
20. LEED Credit EQ 6.2, Controllability of Systems, Individual Controls: Product Data for sensors and control system used to provide individual airflow and temperature controls.

- - - END - - -

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies the availability and source of references and standards specified in the project manual under paragraphs APPLICABLE PUBLICATIONS and/or shown on the drawings.

1.2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS FPMR PART 101-29 (FAR 52.211-1) (AUG 1998)

A. The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29 and copies of specifications, standards, and commercial item descriptions cited in the solicitation may be obtained for a fee by submitting a request to – GSA Federal Supply Service, Specifications Section, Suite 8100, 470 East L'Enfant Plaza, SW, Washington, DC 20407, Telephone (202) 619-8925, Facsimile (202) 619-8978.

B. If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (a) of this provision. Additional copies will be issued for a fee.

1.3 AVAILABILITY FOR EXAMINATION OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-4) (JUN 1988)

A. The specifications and standards cited in this solicitation can be examined at the following location:
DEPARTMENT OF VETERANS AFFAIRS
Office of Construction & Facilities Management
Facilities Quality Service (00CFM1A)
811 Vermont Avenue, NW - Room 462
Washington, DC 20420
Telephone Numbers: (202) 461-8217 or (202) 461-8292
Between 9:00 AM - 3:00 PM

1.4 AVAILABILITY OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-3) (JUN 1988)

A. The specifications cited in this solicitation may be obtained from the associations or organizations listed below.

AA	Aluminum Association Inc. http://www.aluminum.org
AABC	Associated Air Balance Council http://www.aabchq.com
AAMA	American Architectural Manufacturer's Association http://www.aamanet.org
AAN	American Nursery and Landscape Association http://www.anla.org
AASHTO	American Association of State Highway and Transportation Officials http://www.aashto.org
AATCC	American Association of Textile Chemists and Colorists http://www.aatcc.org
ACGIH	American Conference of Governmental Industrial Hygienists http://www.acgih.org
ACI	American Concrete Institute http://www.aci-int.net
ACPA	American Concrete Pipe Association http://www.concrete-pipe.org
ACPPA	American Concrete Pressure Pipe Association http://www.acppa.org
ADC	Air Diffusion Council http://flexibleduct.org
AGA	American Gas Association http://www.aga.org
AGC	Associated General Contractors of America http://www.agc.org
AGMA	American Gear Manufacturers Association, Inc. http://www.agma.org
AHAM	Association of Home Appliance Manufacturers http://www.aham.org
AISC	American Institute of Steel Construction http://www.aisc.org
AISI	American Iron and Steel Institute http://www.steel.org
AITC	American Institute of Timber Construction http://www.aitc-glulam.org
AMCA	Air Movement and Control Association, Inc. http://www.amca.org
ANLA	American Nursery & Landscape Association http://www.anla.org

ANSI	American National Standards Institute, Inc. http://www.ansi.org
APA	The Engineered Wood Association http://www.apawood.org
ARI	Air-Conditioning and Refrigeration Institute http://www.ari.org
ASAE	American Society of Agricultural Engineers http://www.asae.org
ASCE	American Society of Civil Engineers http://www.asce.org
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers http://www.ashrae.org
ASME	American Society of Mechanical Engineers http://www.asme.org
ASSE	American Society of Sanitary Engineering http://www.asse-plumbing.org
ASTM	American Society for Testing and Materials http://www.astm.org
AWI	Architectural Woodwork Institute http://www.awinet.org
AWS	American Welding Society http://www.aws.org
AWWA	American Water Works Association http://www.awwa.org
BHMA	Builders Hardware Manufacturers Association http://www.buildershardware.com
BIA	Brick Institute of America http://www.bia.org
CAGI	Compressed Air and Gas Institute http://www.cagi.org
CGA	Compressed Gas Association, Inc. http://www.cganet.com
CI	The Chlorine Institute, Inc. http://www.chlorineinstitute.org
CISCA	Ceilings and Interior Systems Construction Association http://www.cisca.org
CISPI	Cast Iron Soil Pipe Institute http://www.cispi.org
CLFMI	Chain Link Fence Manufacturers Institute http://www.chainlinkinfo.org

CPMB	Concrete Plant Manufacturers Bureau http://www.cpmb.org
CRA	California Redwood Association http://www.calredwood.org
CRSI	Concrete Reinforcing Steel Institute http://www.crsi.org
CTI	Cooling Technology Institute http://www.cti.org
DHI	Door and Hardware Institute http://www.dhi.org
EGSA	Electrical Generating Systems Association http://www.egsa.org
EEI	Edison Electric Institute http://www.eei.org
EPA	Environmental Protection Agency http://www.epa.gov
ETL	ETL Testing Laboratories, Inc. http://www.et1.com
FAA	Federal Aviation Administration http://www.faa.gov
FCC	Federal Communications Commission http://www.fcc.gov
FPS	The Forest Products Society http://www.forestprod.org
GANA	Glass Association of North America http://www.cssinfo.com/info/gana.html/
FM	Factory Mutual Insurance http://www.fmglobal.com
GA	Gypsum Association http://www.gypsum.org
GSA	General Services Administration http://www.gsa.gov
HI	Hydraulic Institute http://www.pumps.org
HPVA	Hardwood Plywood & Veneer Association http://www.hpva.org
ICBO	International Conference of Building Officials http://www.icbo.org
ICEA	Insulated Cable Engineers Association Inc. http://www.icea.net

\ICAC	Institute of Clean Air Companies http://www.icac.com
IEEE	Institute of Electrical and Electronics Engineers http://www.ieee.org\
IMSA	International Municipal Signal Association http://www.imsasafety.org
IPCEA	Insulated Power Cable Engineers Association
NBMA	Metal Buildings Manufacturers Association http://www.mbma.com
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry Inc. http://www.mss-hq.com
NAAMM	National Association of Architectural Metal Manufacturers http://www.naamm.org
NAPHCC	Plumbing-Heating-Cooling Contractors Association http://www.phccweb.org.org
NBS	National Bureau of Standards See - NIST
NBBPVI	National Board of Boiler and Pressure Vessel Inspectors http://www.nationboard.org
NEC	National Electric Code See - NFPA National Fire Protection Association
NEMA	National Electrical Manufacturers Association http://www.nema.org
NFPA	National Fire Protection Association http://www.nfpa.org
NHLA	National Hardwood Lumber Association http://www.natlhardwood.org
NIH	National Institute of Health http://www.nih.gov
NIST	National Institute of Standards and Technology http://www.nist.gov
NLMA	Northeastern Lumber Manufacturers Association, Inc. http://www.nelma.org
NPA	National Particleboard Association 18928 Premiere Court Gaithersburg, MD 20879 (301) 670-0604
NSF	National Sanitation Foundation http://www.nsf.org

NWWDA	Window and Door Manufacturers Association http://www.nwwda.org
OSHA	Occupational Safety and Health Administration Department of Labor http://www.osha.gov
PCA	Portland Cement Association http://www.portcement.org
PCI	Precast Prestressed Concrete Institute http://www.pci.org
PPI	The Plastic Pipe Institute http://www.plasticpipe.org
PEI	Porcelain Enamel Institute, Inc. http://www.porcelainenamel.com
PTI	Post-Tensioning Institute http://www.post-tensioning.org
RFCI	The Resilient Floor Covering Institute http://www.rfci.com
RIS	Redwood Inspection Service See - CRA
RMA	Rubber Manufacturers Association, Inc. http://www.rma.org
SCMA	Southern Cypress Manufacturers Association http://www.cypressinfo.org
SDI	Steel Door Institute http://www.steeldoor.org
IGMA	Insulating Glass Manufacturers Alliance http://www.igmaonline.org
SJI	Steel Joist Institute http://www.steeljoist.org
SMACNA	Sheet Metal and Air-Conditioning Contractors National Association, Inc. http://www.smacna.org
SSPC	The Society for Protective Coatings http://www.sspc.org
STI	Steel Tank Institute http://www.steeltank.com
SWI	Steel Window Institute http://www.steelwindows.com
TCA	Tile Council of America, Inc. http://www.tileusa.com

TEMA	Tubular Exchange Manufacturers Association http://www.tema.org
TPI	Truss Plate Institute, Inc. 583 D'Onofrio Drive; Suite 200 Madison, WI 53719 (608) 833-5900
UBC	The Uniform Building Code See ICBO
UL	Underwriters' Laboratories Incorporated http://www.ul.com
ULC	Underwriters' Laboratories of Canada http://www.ulc.ca
WCLIB	West Coast Lumber Inspection Bureau 6980 SW Varns Road, P.O. Box 23145 Portland, OR 97223 (503) 639-0651
WRCLA	Western Red Cedar Lumber Association P.O. Box 120786 New Brighton, MN 55112 (612) 633-4334
WWPA	Western Wood Products Association http://www.wwpa.org

- - - E N D - - -

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section specifies materials testing activities and inspection services required during project construction to be provided by a Testing Laboratory retained by Department of Veterans Affairs.

1.2 APPLICABLE PUBLICATIONS:

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

B. American Association of State Highway and Transportation Officials (AASHTO):

T27-06.....Sieve Analysis of Fine and Coarse Aggregates
T96-02 (R2006).....Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
T99-01 (R2004).....The Moisture-Density Relations of Soils Using a 2.5 Kg (5.5 lb.) Rammer and a 305 mm (12 in.) Drop
T104-99 (R2003).....Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
T180-01 (R2004).....Moisture-Density Relations of Soils using a 4.54 kg (10 lb.) Rammer and a 457 mm (18 in.) Drop
T191-02(R2006).....Density of Soil In-Place by the Sand-Cone Method

C. American Concrete Institute (ACI):

506.4R-94 (R2004).....Guide for the Evaluation of Shotcrete

D. American Society for Testing and Materials (ASTM):

A325-06.....Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
A370-07.....Definitions for Mechanical Testing of Steel Products
A416/A416M-06.....Steel Strand, Uncoated Seven-Wire for Prestressed Concrete
A490-06.....Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength
C31/C31M-06.....Making and Curing Concrete Test Specimens in the Field
C33-03.....Concrete Aggregates

C39/C39M-05.....Compressive Strength of Cylindrical Concrete Specimens
C109/C109M-05.....Compressive Strength of Hydraulic Cement Mortars
C138-07.....Unit Weight, Yield, and Air Content (Gravimetric) of Concrete
C140-07.....Sampling and Testing Concrete Masonry Units and Related Units
C143/C143M-05.....Slump of Hydraulic Cement Concrete
C172-07.....Sampling Freshly Mixed Concrete
C173-07.....Air Content of freshly Mixed Concrete by the Volumetric Method
C330-05.....Lightweight Aggregates for Structural Concrete
C567-05.....Density Structural Lightweight Concrete
C780-07.....Pre-construction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
C1019-08.....Sampling and Testing Grout
C1064/C1064M-05.....Freshly Mixed Portland Cement Concrete
C1077-06.....Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
C1314-07.....Compressive Strength of Masonry Prisms
D698-07.....Laboratory Compaction Characteristics of Soil Using Standard Effort
D1143-07.....Piles Under Static Axial Compressive Load
D1188-07.....Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens
D1556-07.....Density and Unit Weight of Soil in Place by the Sand-Cone Method
D1557-07.....Laboratory Compaction Characteristics of Soil Using Modified Effort
D2166-06.....Unconfined Compressive Strength of Cohesive Soil
D2167-94(R2001).....Density and Unit Weight of Soil in Place by the Rubber Balloon Method
D2216-05.....Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D2922-05.....Density of soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D2974-07.....Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

D3666-(2002).....Minimum Requirements for Agencies Testing and Inspection Bituminous Paving Materials
D3740-07.....Minimum Requirements for Agencies Engaged in the Testing and Inspecting Road and Paving Material
E94-04.....Radiographic Testing
E164-03.....Ultrasonic Contact Examination of Weldments
E329-07.....Agencies Engaged in Construction Inspection and/or Testing
E543-06.....Agencies Performing Non-Destructive Testing
E605-93(R2006).....Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members
E709-(2001).....Guide for Magnetic Particle Examination
E1155-96(R2008).....Determining FF Floor Flatness and FL Floor Levelness Numbers

E. American Welding Society (AWS):
D1.1-07.....Structural Welding Code-Steel

1.3 REQUIREMENTS:

A. Accreditation Requirements: Testing Laboratory retained by Department of Veterans Affairs, must be accredited by one or more of the National Voluntary Laboratory Accreditation Program (NVLAP) programs acceptable in the geographic region for the project. Furnish to the Resident Engineer a copy of the Certificate of Accreditation and Scope of Accreditation. For testing laboratories that have not yet obtained accreditation by a NVLAP program, submit an acknowledgement letter from one of the laboratory accreditation authorities indicating that the application for accreditation has been received and the accreditation process has started, and submit to the Resident Engineer for approval, certified statements, signed by an official of the testing laboratory attesting that the proposed laboratory, meets or conforms to the ASTM standards listed below as appropriate to the testing field.

1. Laboratories engaged in testing of construction materials shall meet the requirements of ASTM E329.
2. Laboratories engaged in testing of concrete and concrete aggregates shall meet the requirements of ASTM C1077.
3. Laboratories engaged in testing of bituminous paving materials shall meet the requirements of ASTM D3666.
4. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D3740.

5. Laboratories engaged in inspection and testing of steel, stainless steel, and related alloys will be evaluated according to ASTM A880.
6. Laboratories engaged in non-destructive testing (NDT) shall meet the requirements of ASTM E543.
7. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA.

B. Inspection and Testing: Testing laboratory shall inspect materials and workmanship and perform tests described herein and additional tests requested by Resident Engineer. When it appears materials furnished, or work performed by Contractor fail to meet construction contract requirements, Testing Laboratory shall direct attention of Resident Engineer to such failure.

C. Written Reports: Testing laboratory shall submit test reports to Resident Engineer, Contractor, and Local Building Authority within 24 hours after each test is completed unless other arrangements are agreed to in writing by the Resident Engineer. Submit reports of tests that fail to meet construction contract requirements on colored paper.

D. Verbal Reports: Give verbal notification to Resident Engineer immediately of any irregularity.

E. Test Standards: The Contractor shall include a lump sum allowance of $5000 for furnishing published standards (ASTM, AASHTO, ACI, ANSI, AWS, ASHRAE, UL, etc.) referred to or specifically referenced which are pertinent to any Sections of these specifications. Furnish one set of standards in single copies or bound volumes to the Resident Engineer within 60 days. Photocopies are not acceptable. Billings for the standards furnished shall be at the net cost to Testing Laboratory. A preliminary list of test standards, with the estimated costs, shall be submitted to the Resident Engineer for review before any publications of reference standards are ordered.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EARTHWORK:

A. General: The Testing Laboratory shall provide qualified personnel, materials, equipment, and transportation as required to perform the services identified/required herein, within the agreed to schedule and/or time frame. The work to be performed shall be as identified herein and shall include but not be limited to the following:

1. Observe fill and subgrades during proof-rolling to evaluate suitability of surface material to receive fill or base course. Provide recommendations to the Resident Engineer regarding

suitability or unsuitability of areas where proof-rolling was observed. Where unsuitable results are observed, witness excavation of unsuitable material and recommend to Resident Engineer extent of removal and replacement of unsuitable materials and observe proof-rolling of replaced areas until satisfactory results are obtained.

2. Provide full time observation of fill placement and compaction and field density testing in building areas and provide full time observation of fill placement and compaction and field density testing in pavement areas to verify that earthwork compaction obtained is in accordance with contract documents.
3. Provide supervised geotechnical technician to inspect excavation, subsurface preparation, and backfill for structural fill.

B. Testing Compaction:

1. Determine maximum density and optimum moisture content for each type of fill, backfill and subgrade material used, in compliance with ASTM D1557 Method A.
2. Make field density tests in accordance with the primary testing method following ASTM D2922 wherever possible. Field density tests utilizing ASTM D1556, or ASTM D2167 shall be utilized on a case by case basis only if there are problems with the validity of the results from the primary method due to specific site field conditions. Should the testing laboratory propose these alternative methods, they should provide satisfactory explanation to the Resident Engineer before the tests are conducted.
   a. Building Slab Subgrade: At least one test of subgrade for every 185 m^2 (2000 square feet) of building slab, but in no case fewer than three tests. In each compacted fill layer, perform one test for every 185 m^2 (2000 square feet) of overlaying building slab, but in no case fewer than three tests.
   b. Foundation Wall Backfill: One test per 30 m (100 feet) of each layer of compacted fill but in no case fewer than two tests.
   c. Pavement Subgrade: One test for each 335 m^2 (400 square yards), but in no case fewer than two tests.
   d. Curb, Gutter, and Sidewalk: One test for each 90 m (300 feet), but in no case fewer than two tests.
   e. Trenches: One test at maximum 30 m (100 foot) intervals per 1200 mm (4 foot) of vertical lift and at changes in required density, but in no case fewer than two tests.
   f. Footing Subgrade: At least one test for each layer of soil on which footings will be placed. Subsequent verification and

approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested subgrade when acceptable to Resident Engineer. In each compacted fill layer below wall footings, perform one field density test for every 30 m (100 feet) of wall. Verify subgrade is level, all loose or disturbed soils have been removed, and correlate actual soil conditions observed with those indicated by test borings.

C. Testing for Footing Bearing Capacity: Evaluate if suitable bearing capacity material is encountered in footing subgrade.

D. Testing Materials: Test suitability of on-site and off-site borrow as directed by Resident Engineer.

3.2 FOUNDATION PILES:

A. Witness load test procedure for conformance with ASTM D1143 and interpret test data to verify geotechnical recommendations for pile capacity. Submit load test report in accordance with ASTM D1143.

B. Review Contractor's equipment, methods, and procedures prior to starting any work on site. Provide continuous inspection of pile installation. Maintain a record of all pertinent phases of operation for submittal to Resident Engineer.

C. Auger-Placed Piles: Take and test samples of grout in accordance with ASTM C109 for conformance with specified strength requirements. Not less than six cubes shall be made for each day of casting. Test three cubes at 7 days and three at 28 days.

D. Cast-in-Place Concrete Piles: Test concrete including materials for concrete as required in Article CONCRETE of this section, except make two test cylinders for each day's production of each strength of concrete produced.

E. Prestressed Concrete Piles:

1. Inspection at Plant: Inspect forms, placement of reinforcing steel and strands, placement and finishing of concrete, and tensioning of strands.
2. Concrete Testing: Test concrete including materials for concrete as required in Article, CONCRETE of this section, except make two test cylinders for each day's production of each strength of concrete produced.
3. Test strand for conformance with ASTM A416/A416M and furnish report to Resident Engineer.
4. Inspect piles to insure specification requirements for curing and finishes have been met.

3.3 FOUNDATION CAISSONS:

A. Concrete Testing: Test concrete including materials for concrete as required in Article, CONCRETE of this section, except make two test cylinders for each day's placement of concrete.

B. Maintain a record of concrete used in each caisson. Compare records with calculated volumes.

C. Inspect percussion hole in bottom of each caisson to determine that material is capable of supporting design load.

D. Inspect sides and bottom of each caisson for compliance with contract documents.

E. Submit a certified "Caisson Field Record" for each caisson, recording actual elevation at bottom of shaft; final center line location of top; variation of shaft from plumb; results of all tests performed; actual allowable bearing capacity of bottom; depth of socket into rock; levelness of bottom; seepage of water; still water level (if allowed to flood); variation of shaft (from dimensions shown); location and size of reinforcement, and evidence of seams, voids, or channels below the bottom. Verify the actual bearing capacity of the rock strata by the use of a calibrated penetrometer or other acceptable method.

F. Caissons Bearing on Hardpan: Take undisturbed samples, suitable for tests required, from caisson bottom. Make auger probe to a depth of 2.5 meters (8 feet) below bottom and visually inspect and classify soil. Verify continuity of strata and thickness.

1. Conduct the following test on each sample, and report results and evaluations to the Resident Engineer:
   a. Unconfined Compression Test (ASTM D2166).
   b. Moisture Content (ASTM D2216).
   c. Density.

3.4 SITE WORK CONCRETE:

A. Test site work concrete including materials for concrete as required in Article CONCRETE of this section.

3.5 CONCRETE:

A. Batch Plant Inspection and Materials Testing:

1. Perform continuous batch plant inspection until concrete quality is established to satisfaction of Resident Engineer with concurrence of Contracting Officer and perform periodic inspections thereafter as determined by Resident Engineer.
2. Periodically inspect and test batch proportioning equipment for accuracy and report deficiencies to Resident Engineer.

3. Sample and test mix ingredients as necessary to insure compliance with specifications.
4. Sample and test aggregates daily and as necessary for moisture content. Test the dry rodded weight of the coarse aggregate whenever a sieve analysis is made, and when it appears there has been a change in the aggregate.
5. Certify, in duplicate, ingredients and proportions and amounts of ingredients in concrete conform to approved trial mixes. When concrete is batched or mixed off immediate building site, certify (by signing, initialing or stamping thereon) on delivery slips (duplicate) that ingredients in truck-load mixes conform to proportions of aggregate weight, cement factor, and water-cement ratio of approved trial mixes.

B. Field Inspection and Materials Testing:
1. Provide a technician at site of placement at all times to perform concrete sampling and testing.
2. Review the delivery tickets of the ready-mix concrete trucks arriving on-site. Notify the Contractor if the concrete cannot be placed within the specified time limits or if the type of concrete delivered is incorrect. Reject any loads that do not comply with the Specification requirements. Rejected loads are to be removed from the site at the Contractor’s expense. Any rejected concrete that is placed will be subject to removal.
3. Take concrete samples at point of placement in accordance with ASTM C172. Mold and cure compression test cylinders in accordance with ASTM C31. Make at least three cylinders for each 40 m^3 (50 cubic yards) or less of each concrete type, and at least three cylinders for any one day's pour for each concrete type. // After good concrete quality control has been established and maintained as determined by Resident Engineer make three cylinders for each 80 m^3 (100 cubic yards) or less of each concrete type, and at least three cylinders from any one day's pour for each concrete type. // Label each cylinder with an identification number. Resident Engineer may require additional cylinders to be molded and cured under job conditions.
4. Perform slump tests in accordance with ASTM C143. Test the first truck each day, and every time test cylinders are made. Test pumped concrete at the hopper and at the discharge end of the hose at the beginning of each day’s pumping operations to determine change in slump.

5. Determine the air content of concrete per ASTM C173. For concrete required to be air-entrained, test the first truck and every 20 m^3 (25 cubic yards) thereafter each day. For concrete not required to be air-entrained, test every 80 m^3 (100 cubic yards) at random. For pumped concrete, initially test concrete at both the hopper and the discharge end of the hose to determine change in air content.
6. If slump or air content fall outside specified limits, make another test immediately from another portion of same batch.
7. Perform unit weight tests in compliance with ASTM C138 for normal weight concrete and ASTM C567 for lightweight concrete. Test the first truck and each time cylinders are made.
8. Notify laboratory technician at batch plant of mix irregularities and request materials and proportioning check.
9. Verify that specified mixing has been accomplished.
10. Environmental Conditions: Determine the temperature per ASTM C1064 for each truckload of concrete during hot weather and cold weather concreting operations:
    a. When ambient air temperature falls below 4.4 degrees C (40 degrees F), record maximum and minimum air temperatures in each 24 hour period; record air temperature inside protective enclosure; record minimum temperature of surface of hardened concrete.
    b. When ambient air temperature rises above 29.4 degrees C (85 degrees F), record maximum and minimum air temperature in each 24 hour period; record minimum relative humidity; record maximum wind velocity; record maximum temperature of surface of hardened concrete.
11. Inspect the reinforcing steel placement, including bar size, bar spacing, top and bottom concrete cover, proper tie into the chairs, and grade of steel prior to concrete placement. Submit detailed report of observations.
12. Observe conveying, placement, and consolidation of concrete for conformance to specifications.
13. Observe condition of formed surfaces upon removal of formwork prior to repair of surface defects and observe repair of surface defects.
14. Observe curing procedures for conformance with specifications, record dates of concrete placement, start of preliminary curing, start of final curing, end of curing period.
15. Observe preparations for placement of concrete:
    a. Inspect handling, conveying, and placing equipment, inspect vibrating and compaction equipment.

b. Inspect preparation of construction, expansion, and isolation joints.

16. Observe preparations for protection from hot weather, cold weather, sun, and rain, and preparations for curing.
17. Observe concrete mixing:
    a. Monitor and record amount of water added at project site.
    b. Observe minimum and maximum mixing times.
18. Measure concrete flatwork for levelness and flatness as follows:
    a. Perform Floor Tolerance Measurements F_F and F_L in accordance with ASTM E1155. Calculate the actual overall F- numbers using the inferior/superior area method.
    b. Perform all floor tolerance measurements within 48 hours after slab installation and prior to removal of shoring and formwork.
    c. Provide the Contractor and the Resident Engineer with the results of all profile tests, including a running tabulation of the overall F_F and F_L values for all slabs installed to date, within 72 hours after each slab installation.
19. Other inspections:
    a. Grouting under base plates.
    b. Grouting anchor bolts and reinforcing steel in hardened concrete.

C. Laboratory Tests of Field Samples:

1. Test compression test cylinders for strength in accordance with ASTM C39. For each test series, test one cylinder at 7 days and one cylinder at 28 days. Use remaining cylinder as a spare tested as directed by Resident Engineer. Compile laboratory test reports as follows: Compressive strength test shall be result of one cylinder, except when one cylinder shows evidence of improper sampling, molding or testing, in which case it shall be discarded and strength of spare cylinder shall be used.
2. Make weight tests of hardened lightweight structural concrete in accordance with ASTM C567.
3. Furnish certified compression test reports (duplicate) to Resident Engineer. In test report, indicate the following information:
    a. Cylinder identification number and date cast.
    b. Specific location at which test samples were taken.
    c. Type of concrete, slump, and percent air.
    d. Compressive strength of concrete in MPa (psi).
    e. Weight of lightweight structural concrete in kg/m^3 (pounds per cubic feet).
    f. Weather conditions during placing.

g. Temperature of concrete in each test cylinder when test cylinder was molded.
h. Maximum and minimum ambient temperature during placing.
i. Ambient temperature when concrete sample in test cylinder was taken.
j. Date delivered to laboratory and date tested.

3.6 MASONRY:

A. Mortar Tests:
1. Laboratory compressive strength test:
a. Comply with ASTM C780.
b. Obtain samples during or immediately after discharge from batch mixer.
c. Furnish molds with 50 mm (2 inch), 3 compartment gang cube.
d. Test one sample at 7 days and 2 samples at 28 days.
2. Two tests during first week of operation; one test per week after initial test until masonry completion.

B. Grout Tests:
1. Laboratory compressive strength test:
a. Comply with ASTM C1019.
b. Test one sample at 7 days and 2 samples at 28 days.
c. Perform test for each 230 m^2 (2500 square feet) of masonry.

C. Masonry Unit Tests:
1. Laboratory Compressive Strength Test:
a. Comply with ASTM C140.
b. Test 3 samples for each 460 m^2 (5000 square feet) of wall area.

D. Prism Tests: For each type of wall construction indicated, test masonry prisms per ASTM C1314 for each 460 m^2 (5000 square feet) of wall area. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

3.7 STRUCTURAL STEEL:

A. General: Provide shop and field inspection and testing services to certify structural steel work is done in accordance with contract documents. Welding shall conform to AWS D1.1 Structural Welding Code.

B. Prefabrication Inspection:
1. Review design and shop detail drawings for size, length, type and location of all welds to be made.
2. Approve welding procedure qualifications either by pre-qualification or by witnessing qualifications tests.
3. Approve welder qualifications by certification or retesting.
4. Approve procedure for control of distortion and shrinkage stresses.

5. Approve procedures for welding in accordance with applicable sections of AWS D1.1.

C. Fabrication and Erection:

1. Weld Inspection:
   a. Inspect welding equipment for capacity, maintenance and working condition.
   b. Verify specified electrodes and handling and storage of electrodes in accordance with AWS D1.1.
   c. Inspect preparation and assembly of materials to be welded for conformance with AWS D1.1.
   d. Inspect preheating and interpass temperatures for conformance with AWS D1.1.
   e. Measure 25 percent of fillet welds.
   f. Welding Magnetic Particle Testing: Test in accordance with ASTM E709 for a minimum of:
      1) 20 percent of all shear plate fillet welds at random, final pass only.
      2) 20 percent of all continuity plate and bracing gusset plate fillet welds, at random, final pass only.
      3) 100 percent of tension member fillet welds (i.e., hanger connection plates and other similar connections) for root and final passes.
      4) 20 percent of length of built-up column member partial penetration and fillet welds at random for root and final passes.
      5) 100 percent of length of built-up girder member partial penetration and fillet welds for root and final passes.
   g. Welding Ultrasonic Testing: Test in accordance with ASTM E164 and AWS D1.1 for 100 percent of all full penetration welds, braced and moment frame column splices, and a minimum of 20 percent of all other partial penetration column splices, at random.
   h. Welding Radiographic Testing: Test in accordance with ASTM E94, and AWS D1.1 for 5 percent of all full penetration welds at random.
   i. Verify that correction of rejected welds are made in accordance with AWS D1.1.
   j. Testing and inspection do not relieve the Contractor of the responsibility for providing materials and fabrication procedures in compliance with the specified requirements.
2. Bolt Inspection:

a. Inspect high-strength bolted connections in accordance AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts.
b. Slip-Critical Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in each connection in accordance with AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts. Inspect all bolts in connection when one or more are rejected.
c. Fully Pre-tensioned Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in 25 percent of connections in accordance with AISC Specification for Structural Joints Using ASTM A325 or A490 Bolts. Inspect all bolts in connection when one or more are rejected.
d. Bolts installed by turn-of-nut tightening may be inspected with calibrated wrench when visual inspection was not performed during tightening.
e. Snug Tight Connections: Inspect 10 percent of connections verifying that plies of connected elements have been brought into snug contact.
f. Inspect field erected assemblies; verify locations of structural steel for plumbness, level, and alignment.

D. Submit inspection reports, record of welders and their certification, and identification, and instances of noncompliance to Resident Engineer.

3.8 STEEL DECKING:

A. Provide field inspection of welds of metal deck to the supporting steel, and testing services to insure steel decking has been installed in accordance with contract documents and manufacturer’s requirements.
B. Qualification of Field Welding: Qualify welding processes and welding operators in accordance with “Welder Qualification” procedures of AWS D1.1. Refer to the “Plug Weld Qualification Procedure” in Part 3 “Field Quality Control.”
C. Submit inspection reports, certification, and instances of noncompliance to Resident Engineer.

3.9 SHEAR CONNECTOR STUDS:

A. Provide field inspection and testing services required by AWS D.1 to insure shear connector studs have been installed in accordance with contract documents.
B. Tests: Test 20 percent of headed studs for fastening strength in accordance with AWS D1.1.

C. Submit inspection reports, certification, and instances of noncompliance to Resident Engineer.

3.10 SPRAYED-ON FIREPROOFING:

A. Provide field inspection and testing services to certify sprayed-on fireproofing has been applied in accordance with contract documents.

B. Obtain a copy of approved submittals from Resident Engineer.

C. Use approved installation in test areas as criteria for inspection of work.

D. Test sprayed-on fireproofing for thickness and density in accordance with ASTM E605.

1. Thickness gauge specified in ASTM E605 may be modified for pole extension so that overhead sprayed material can be reached from floor.

E. Location of test areas for field tests as follows:

1. Thickness: Select one bay per floor, or one bay for each 930 m^2 (10,000 square feet) of floor area, whichever provides for greater number of tests. Take thickness determinations from each of following locations: Metal deck, beam, and column.
2. Density: Take density determinations from each floor, or one test from each 930 m^2 (10,000 square feet) of floor area, whichever provides for greater number of tests, from each of the following areas: Underside of metal deck, beam flanges, and beam web.

F. Submit inspection reports, certification, and instances of noncompliance to Resident Engineer.

- - - E N D - - -

SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1. DESCRIPTION

A. This section specifies the control of environmental pollution and damage that the Contractor must consider for air, water, and land resources. It includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants and resources encountered or generated by the Contractor. The Contractor is obligated to consider specified control measures with the costs included within the various contract items of work.

B. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
   1. Adversely effect human health or welfare,
   2. Unfavorably alter ecological balances of importance to human life,
   3. Effect other species of importance to humankind, or;
   4. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.

C. Definitions of Pollutants:
   1. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.
   2. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
   3. Sediment: Soil and other debris that has been eroded and transported by runoff water.
   4. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
   5. Surface Discharge: The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "water of the United States" and would require a permit to discharge water from the governing agency.
   6. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.

7. Sanitary Wastes:
   a. Sewage: Domestic sanitary sewage and human and animal waste.
   b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2. QUALITY CONTROL

A. Establish and maintain quality control for the environmental protection of all items set forth herein.

B. Record on daily reports any problems in complying with laws, regulations, and ordinances. Note any corrective action taken.

1.3. REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. U.S. National Archives and Records Administration (NARA):
33 CFR 328.....Definitions

1.4. SUBMITTALS

A. In accordance with Section, 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:

1. Environmental Protection Plan: After the contract is awarded and prior to the commencement of the work, the Contractor shall meet with the Resident Engineer to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than 20 days after the meeting, the Contractor shall prepare and submit to the Resident Engineer for approval, a written and/or graphic Environmental Protection Plan including, but not limited to, the following:
   a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.
   b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site.
   C. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
   d. Description of the Contractor's environmental protection personnel training program.
   e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, noise control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

f. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, and archeological and cultural resources.

g. Procedures to provide the environmental protection that comply with the applicable laws and regulations. Describe the procedures to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures as described in the Environmental Protection Plan.

h. Permits, licenses, and the location of the solid waste disposal area.

i. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials. Include as part of an Erosion Control Plan approved by the District Office of the U.S. Soil Conservation Service and the Department of Veterans Affairs.

j. Environmental Monitoring Plans for the job site including land, water, air, and noise.

k. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas. This plan may be incorporated within the Erosion Control Plan.

B. Approval of the Contractor's Environmental Protection Plan will not relieve the Contractor of responsibility for adequate and continued control of pollutants and other environmental protection measures.

1.5. PROTECTION OF ENVIRONMENTAL RESOURCES

A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this contract. Confine activities to areas defined by the specifications and drawings.

B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the Resident Engineer. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted.

1. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.
2. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
   a. Box and protect from damage existing trees and shrubs to remain on the construction site.
   b. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
   c. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
3. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.
4. Temporary Protection of Disturbed Areas: Construct diversion ditches, benches, and berms to retard and divert runoff from the construction site to protected drainage areas approved under paragraph 208 of the Clean Water Act.
   a. Sediment Basins: Trap sediment from construction areas in temporary or permanent sediment basins that accommodate the runoff of a local _100__ (design year) storm. After each storm, pump the basins dry and remove the accumulated sediment. Control overflow/drainage with paved weirs or by vertical overflow pipes, draining from the surface.
   b. Reuse or conserve the collected topsoil sediment as directed by the Resident Engineer. Topsoil use and requirements are specified in Section 31 20 00, EARTH MOVING.
   c. Institute effluent quality monitoring programs as required by Federal, State, and local environmental agencies.
5. Erosion and Sedimentation Control Devices: The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the

Contractor's activities. Construct or install all temporary and permanent erosion and sedimentation control features shown. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, sedimentation basins, grassing, and mulching, until permanent drainage and erosion control facilities are completed and operative.

6. Manage borrow areas on Government property to minimize erosion and to prevent sediment from entering nearby water courses or lakes.
7. Manage and control spoil areas on Government property to limit spoil to areas shown and prevent erosion of soil or sediment from entering nearby water courses or lakes.
8. Protect adjacent areas from despoilment by temporary excavations and embankments.
9. Handle and dispose of solid wastes in such a manner that will prevent contamination of the environment. Place solid wastes (excluding clearing debris) in containers that are emptied on a regular schedule. Transport all solid waste off Government property and dispose of waste in compliance with Federal, State, and local requirements.
10. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
11. Handle discarded materials other than those included in the solid waste category as directed by the Resident Engineer.

C. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this contract.
   1. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.
   2. Control movement of materials and equipment at stream crossings during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
   3. Monitor water areas affected by construction.

D. Protection of Fish and Wildlife Resources: Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife. Prior to beginning

construction operations, list species that require specific attention along with measures for their protection.

E. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the Commonwealth of Pennsylvania Air Pollution Statue, Rule, or Regulation and Federal emission and performance laws and standards. Maintain ambient air quality standards set by the Environmental Protection Agency, for those construction operations and activities specified.
   1. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.
   2. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinklering, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.
   3. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
   4. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.

F. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the Resident Engineer. Maintain noise-produced work at or below the decibel levels and within the time periods specified.
   1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 6:00p.m unless otherwise permitted by local ordinance or the Resident Engineer. Repetitive impact noise on the property shall not exceed the following dB limitations:

Time Duration of Impact Noise	Sound Level in dB
More than 12 minutes in any hour	70
Less than 30 seconds of any hour	85
Less than three minutes of any hour	80
Less than 12 minutes of any hour	75

2. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this contract, consisting of, but not limited to, the following:
   a. Maintain maximum permissible construction equipment noise levels at 15 m (50 feet) (dBA):

EARTHMOVING		MATERIALS HANDLING	
FRONT LOADERS	75	CONCRETE MIXERS	75
BACKHOES	75	CONCRETE PUMPS	75
DOZERS	75	CRANES	75
TRACTORS	75	DERRICKS IMPACT	75
SCAPERS	80	PILE DRIVERS	95
GRADERS	75	JACK HAMMERS	75
TRUCKS	75	ROCK DRILLS	80
PAVERS, STATIONARY	80	PNEUMATIC TOOLS	80
PUMPS	75	BLASTING	75
GENERATORS	75	SAWS	75
COMPRESSORS	75	VIBRATORS	75

   b. Use shields or other physical barriers to restrict noise transmission.
   c. Provide soundproof housings or enclosures for noise-producing machinery.
   d. Use efficient silencers on equipment air intakes.
   e. Use efficient intake and exhaust mufflers on internal combustion engines that are maintained so equipment performs below noise levels specified.
   f. Line hoppers and storage bins with sound deadening material.
   g. Conduct truck loading, unloading, and hauling operations so that noise is kept to a minimum.
3. Measure sound level for noise exposure due to the construction at least once every five successive working days while work is being performed above 55 dB (A) noise level. Measure noise exposure at the property line or 15 m (50 feet) from the noise source, whichever is

greater. Measure the sound levels on the A weighing network of a General Purpose sound level meter at slow response. To minimize the effect of reflective sound waves at buildings, take measurements at 900 to 1800 mm (three to six feet) in front of any building face. Submit the recorded information to the Resident Engineer noting any problems and the alternatives for mitigating actions.

G. Restoration of Damaged Property: If any direct or indirect damage is done to public or private property resulting from any act, omission, neglect, or misconduct, the Contractor shall restore the damaged property to a condition equal to that existing before the damage at no additional cost to the Government. Repair, rebuild, or restore property as directed or make good such damage in an acceptable manner.

H. Final Clean-up: On completion of project and after removal of all debris, rubbish, and temporary construction, Contractor shall leave the construction area in a clean condition satisfactory to the Resident Engineer. Cleaning shall include off the station disposal of all items and materials not required to be salvaged, as well as all debris and rubbish resulting from demolition and new work operations.

- - - E N D - - -

SECTION 01 58 16
TEMPORARY INTERIOR SIGNAGE

PART 1 GENERAL

1.1 DESCRIPTION

A. This section specifies temporary interior signs.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNS

A. Fabricate from 50 Kg (110 pound) mat finish white paper.

B. Cut to 100 mm (4-inch) wide by 300 mm (12 inch) long size tag.

C. Punch 3 mm (1/8-inch) diameter hole centered on 100 mm (4-inch) dimension of tag. Edge of Hole spaced approximately 13 mm (1/2-inch) from one end on tag.

D. Reinforce hole on both sides with gummed cloth washer or other suitable material capable of preventing tie pulling through paper edge.

E. Ties: Steel wire 0.3 mm (0.0120-inch) thick, attach to tag with twist tie, leaving 150 mm (6-inch) long free ends.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install temporary signs attached to room door frame or room door knob, lever, or pull for doors on corridor openings.

B. Mark on signs with felt tip marker having approximately 3 mm (1/8-inch) wide stroke for clearly legible numbers or letters.

C. Identify room with numbers as designated on floor plans.

3.2 LOCATION

A. Install on doors that have room, corridor, and space numbers shown.

B. Doors that do not require signs are as follows:

1. Corridor barrier doors (cross-corridor) in corridor with same number.
2. Folding doors or partitions.
3. Toilet or bathroom doors within and between rooms.
4. Communicating doors in partitions between rooms with corridor entrance doors.
5. Closet doors within rooms.

C. Replace missing, damaged, or illegible signs.

- - - E N D - - -

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.

B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.

C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:

1. Waste Management Plan development and implementation.
2. Techniques to minimize waste generation.
3. Sorting and separating of waste materials.
4. Salvage of existing materials and items for reuse or resale.
5. Recycling of materials that cannot be reused or sold.

D. At a minimum the following waste categories shall be diverted from landfills:

1. Soil.
2. Inerts (eg, concrete, masonry and asphalt).
3. Clean dimensional wood and palette wood.
4. Green waste (biodegradable landscaping materials).
5. Engineered wood products (plywood, particle board and I-joists, etc).
6. Metal products (eg, steel, wire, beverage containers, etc).
7. Cardboard, paper and packaging.
8. Bitumen roofing materials.
9. Plastics (eg, ABS, PVC).
10. Carpet and/or pad.
11. Gypsum board.
12. Insulation.
13. Paint.

1.2 RELATED WORK

A. Section 02 41 00, DEMOLITION.

B. Section 01 00 00, GENERAL REQUIREMENTS.

C. Lead Paint: Section 02 83 33.13, LEAD BASED PAINT REMOVAL AND DISPOSAL.

1.3 QUALITY ASSURANCE

A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction /Demolition waste includes products of the following:
   1. Excess or unusable construction materials.
   2. Packaging used for construction products.
   3. Poor planning and/or layout.
   4. Construction error.
   5. Over ordering.
   6. Weather damage.
   7. Contamination.
   8. Mishandling.
   9. Breakage.

B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.

C. Contractor shall develop and implement procedures to reuse and recycle new materials to a minimum of 50 percent.

D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.

E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations. The Whole Building Design Guide website http://www.wbdg.org provides a Construction Waste Management Database that contains information on companies that haul. Collect, and process recyclable debris from construction projects.

F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.

G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.

H. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

1.4 TERMINOLOGY

A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial and industrial waste resulting from construction, remodeling, repair and demolition operations.

B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.

C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.

D. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.

E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).

F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.

G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.

H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.

I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.

J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.

K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.

L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
   1. On-site Recycling – Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.
   2. Off-site Recycling – Materials hauled to a location and used in an altered form in the manufacture of new products.

M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a solid waste facilities permit or be regulated by the local enforcement agency.

N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.

O. Return: To give back reusable items or unused products to vendors for credit.

P. Salvage: To remove waste materials from the site for resale or re-use by a third party.

Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.

R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.

S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

1.5 SUBMITTALS

A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:

B. Prepare and submit to the Resident Engineer a written demolition debris management plan. The plan shall include, but not be limited to, the following information:
   1. Procedures to be used for debris management.
   2. Techniques to be used to minimize waste generation.
   3. Analysis of the estimated job site waste to be generated:
      a. List of each material and quantity to be salvaged, reused, recycled.
      b. List of each material and quantity proposed to be taken to a landfill.
   4. Detailed description of the Means/Methods to be used for material handling.
      a. On site: Material separation, storage, protection where applicable.
      b. Off site: Transportation means and destination. Include list of materials.
         1) Description of materials to be site-separated and self-hauled to designated facilities.
         2) Description of mixed materials to be collected by designated waste haulers and removed from the site.
      c. The names and locations of mixed debris reuse and recycling facilities or sites.
      d. The names and locations of trash disposal landfill facilities or sites.
      e. Documentation that the facilities or sites are approved to receive the materials.

C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.

D. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.

1.6 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced by the basic designation only. In the event that criteria requirements conflict, the most stringent requirements shall be met.

B. U.S. Green Building Council (USGBC):
LEED Green Building Rating System for New Construction

1.7 RECORDS

A. Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Records shall be kept in accordance with the LEED Reference Guide and LEED Template.

PART 2 - PRODUCTS

2.1 MATERIALS

A. List of each material and quantity to be salvaged, recycled, reused.
B. List of each material and quantity proposed to be taken to a landfill.
C. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

PART 3 - EXECUTION

3.1 COLLECTION

A. Provide all necessary containers, bins and storage areas to facilitate effective waste management.
B. Clearly identify containers, bins and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.
C. Hazardous wastes shall be separated, stored, disposed of according to local, state, federal regulations.

3.2 DISPOSAL

A. Contractor shall be responsible for transporting and disposing of materials that cannot be delivered to a source-separated or mixed materials recycling facility to a transfer station or disposal facility that can accept the materials in accordance with state and federal regulations.
B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

3.3 REPORT

A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of period covered.

B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.

C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

- - - E N D - - -

SECTION 01 81 13

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section includes general requirements and procedures for compliance with certain USGBC LEED prerequisites and credits needed for Project to obtain LEED Silver certification based on LEED-NC, Version 2.2.

1. Other LEED prerequisites and credits needed to obtain LEED certification depend on material selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.
2. Additional LEED prerequisites and credits needed to obtain the indicated LEED certification depend on Professional's design and other aspects of Project that are not part of the Work of the Contract.
3. A copy of the LEED Project checklist is attached at the end of this Section for information only.

1.2 RELATED WORK

A. Section 01 00 00 – GENERAL REQUIREMENTS.

B. Section 01 33 33 – ENVIRONMENTAL SUBMITTALS

C. Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT.

D. Section 01 81 19 - INDOOR AIR QUALITY REQUIREMENT.

1.3 DEFINITIONS

A. U.S. Green Building Council, Leadership in Energy and Environmental Design (LEED) New Construction and Major Renovation, Version 2.2 Reference Guide.

B. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.

C. LEED: Leadership in Energy & Environmental Design.

D. Rapidly Renewable Materials: Materials made from plants that are typically harvested within a 10-year or shorter cycle. Rapidly

renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.

E. Regional Materials: Materials that have been extracted, harvested, or recovered, processed, as well as manufactured, within 500 miles (800 km) of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured within 500 miles (800 km) of the project site, then only that percentage (by weight) shall contribute to the regional value.

F. Recycled Content: The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

1. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.
2. "Pre-consumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

G. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).

1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

1.4 SUBMITTALS

A. General: Submit additional LEED submittals required by other Specification Sections.

B. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements,

submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.

C. Project Materials Cost Data: Provide statement indicating total cost for building materials used for Project, excluding mechanical, electrical, and plumbing components, and specialty items such as elevators and equipment. Include statement indicating total cost for wood-based materials used for Project.

D. LEED Action Plans: Provide preliminary submittals within 14 days of date established for the Notice to Proceed indicating how the following requirements will be met:

1. Credit MR 2.1 and Credit MR 2.2: Waste management plan complying with Division 1 Section "Construction Waste Management and Disposal."
2. Credit MR 4.1 and Credit MR 4.2: List of proposed materials with recycled content. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.
3. Credit MR 5.1 and Credit MR 5.2: List of proposed regional materials. Identify each regional material, including its source, cost, and the fraction by weight that is considered regional.
4. Credit MR 7: List of proposed certified wood products. Indicate each product containing certified wood, including its source and cost of certified wood products.
5. Credit EQ 3.1: Construction indoor-air-quality management plan. Comply with Division 1 Section "Indoor Air Quality Requirement."

E. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:

1. Credit MR 2.1 and Credit MR 2.2: Waste reduction progress reports complying with Division 1 Section "Construction Waste Management and Disposal."
2. Credit MR 4.1 and Credit MR 4.2: Recycled content.
3. Credit MR 5.1 and Credit MR 5.2: Regionally extracted and manufactured materials.
4. Credit MR 7: Certified wood products.

F. LEED Documentation Submittals:

1. Credit EA 5: Product data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy-consumption performance over time.
2. Credit MR 2.1 and Credit MR 2.2: Comply with Division 1 Section "Construction Waste Management and Disposal."
3. Credit MR 4.1 and Credit MR 4.2: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
4. Credit MR 5.1 and Credit MR 5.2: Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
5. Credit MR 7: Product data and chain-of-custody certificates for products containing certified wood. Include statement indicating cost for each certified wood product.
6. Credit EQ 3.1: Comply with Division 1 Section "Indoor Air Quality Requirement."
7. Credit EQ 3.2:
   a. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
   b. Product data for filtration media used during flush-out and during occupancy.
   c. Report from testing and inspecting agency indicating results of indoor-air-quality testing and documentation showing compliance with indoor-air-quality testing procedures and requirements.
8. Credit EQ 4.1: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA Method 24).
9. Credit EQ 4.2: Product data for paints and coatings used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA Method 24).

10. Credit EQ 4.3: Product data for carpet products indicating VOC content of each product used.
11. Credit EQ 4.4: Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin.

1.5 QUALITY ASSURANCE

A. LEED Coordinator: Engage an experienced LEED-Accredited Professional to coordinate LEED requirements. LEED coordinator may also serve as waste management coordinator.

PART 2 - PRODUCTS

2.1 RECYCLED CONTENT OF MATERIALS

A. Credit MR 4.1 and Credit MR 4.2: Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 20 percent of cost of materials used for Project.
   1. Cost of post-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
   2. Cost of post-consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
   3. Do not include mechanical and electrical components in the calculation.

2.2 REGIONAL MATERIALS

A. Credit MR 5.1 and Credit MR 5.2: Provide 20 percent of building materials (by cost) that are regional materials.

2.3 CERTIFIED WOOD

A. Credit MR 7: Provide a minimum of 50 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
   1. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:

a. Rough carpentry.
b. Miscellaneous carpentry.
c. Heavy timber construction.
d. Wood decking.
e. Metal-plate-connected wood trusses.
f. Structural glued-laminated timber.
g. Finish carpentry.
h. Architectural woodwork.
i. Wood paneling.
j. Wood veneer wall covering.
k. Wood flooring.
l. Wood lockers.
m. Wood cabinets.
n. Furniture.

PART 3 - EXECUTION

3.1 MEASUREMENT AND VERIFICATION

A. Credit EA 5: Implement measurement and verification plan consistent with [Option B: Energy Conservation Measure Isolation] [Option D: Calibrated Simulation, Savings Estimation Method 2] in the EVO's "International Performance Measurement and Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction," and as further defined by the following:

B. If not already in place, install metering equipment to measure energy usage. Monitor, record, and trend log measurements.

C. Evaluate energy performance and efficiency by comparing actual to predicted performance.

D. Measurement and verification period shall cover at least one year of postconstruction occupancy.

3.2 CONSTRUCTION WASTE MANAGEMENT

A. Credit MR 2.1 and Credit MR 2.2: Comply with Division 01 Section "Construction Waste Management and Disposal."

3.3 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

A. Credit EQ 3.1: Comply with Division 1 Section "Indoor Air Quality Requirement."

B. Credit EQ 3.2: Comply with one of the following three requirements:

1. After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a

total volume of 14000 cu. ft. (4 300 000 L) of outdoor air per sq. ft. (sq. m) of floor area while maintaining an internal temperature of at least 60 deg F (16 deg C) and a relative humidity no higher than 60 percent.

2. If occupancy is desired prior to flush-out completion, the space may be occupied following delivery of a minimum of 3500 cu. ft. (1 070 000 L) of outdoor air per sq. ft. (sq. m) of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm per sq. ft. (1.52 L/s per sq. m) of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14000 cu. ft./sq. ft. (4 300 000 L/sq. m) of outside air has been delivered to the space.
3. Air-Quality Testing:
   a. Conduct baseline indoor-air-quality testing, after construction ends and prior to occupancy, using testing protocols consistent with the EPA's "Compendium of Methods for the Determination of Air Pollutants in Indoor Air," and as additionally detailed in the USGBC's "LEED-NC: Reference Guide."
   b. Demonstrate that the contaminant maximum concentrations listed below are not exceeded:
      1) Formaldehyde: 50 ppb.
      2) Particulates (PM10): 50 micrograms/cu. m.
      3) Total Volatile Organic Compounds (TVOC): 500 micrograms/cu. m.
      4) 4-Phenylcyclohexene (4-PH): 6.5 micrograms/cu. m.
      5) Carbon Monoxide: 9 ppm and no greater than 2 ppm above outdoor levels.
   c. For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting noncomplying building areas, take samples from same locations as in the first test.
   d. Air-sample testing shall be conducted as follows:

1) All measurements shall be conducted prior to occupancy but during normal occupied hours, and with building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.
2) Building shall have all interior finishes installed including, but not limited to, millwork, doors, paint, carpet, and acoustic tiles. Nonfixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for the testing.
3) Number of sampling locations will vary depending on the size of building and number of ventilation systems. For each portion of building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq. ft. (2300 sq. m) or for each contiguous floor area, whichever is larger, and shall include areas with the least ventilation and greatest presumed source strength.
4) Air samples shall be collected between 3 and 6 feet (0.9 and 1.8 m) from the floor to represent the breathing zone of occupants, and over a minimum four-hour period.

- - -END- - -

SECTION 01 81 19

INDOOR AIR QUALITY REQUIREMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section includes requirements to create and implement a construction indoor air quality management plan to maintain indoor air quality by controlling dust and pollutants.

1.2 RELATED WORK

A. Section 01 00 00 – GENERAL REQUIREMENTS.

B. Section 01 33 33 – ENVIRONMENTAL SUBMITTALS.

C. Section 01 81 13 – SUSTAINABLE DESIGN REQUIREMENTS.

D. Division 02 through 34. Individual sections that involve finish materials. This includes, but is not limited to, adhesives, sealants, paints, primers, carpets and composite wood products.

1.3 REFERENCES

A. Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings Under Construction, 1995.

B. Filtration media: ASHRAE 52.2-1999.

C. Adhesives, Sealants and Sealant Primers: South Coast Air Quality Management District (SCAQMD) Rule #1168 requirements.

D. Topcoat Paints: Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.

E. All other Architectural Coatings, Primers and Undercoats: Regulation 8, Rule 51 of the Bay Area Air Quality Management District (January 7, 1998).

F. Carpet, carpet cushion, carpet adhesive: Carpet and Rug Institute’s Indoor Air Quality Green Label Program and Testing Procedure.

G. Indoor Air Quality Testing: United States EPA Protocol for Environmental Requirements, Baseline IAQ and Materials, for the Research Triangle Park Campus, Section 01445.

1.4 REQUIREMENTS

A. Develop and implement an Indoor Air Quality Management Plan during construction that meets or exceeds the minimum requirements of the SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3. The required Best Management Practices (BMP)are summarized in Part 3 of this Section.

B. Protect stored on-site or installed absorptive materials from moisture damage.

C. Use specific filtration media at each return air grill during construction, after construction, during flushout and prior to occupancy as outlined in Part 2 – Products.

D. Use low- or no-emitting adhesives, sealants, paints, primers, carpets and composite wood products within the vapor barrier.
   1. Product requirements are specified in Divisions 02-34.
   2. Where specific products are not called out, refer to the Requirements within this Section.

E. Conduct a building flush-out or a baseline indoor air quality test procedure consistent with Part 3 of this Section and Division 01 Section "Sustainable design Requirements."
   1. Include a separate milestone date on the CPM Schedule that indicates targeted date for the start of building flushout process.

1.5 SUBMITTALS

A. IAQ Management Plan: Within 60 working days after receipt of Notice of Award of Bid, or prior to HVAC work, whichever occurs sooner, the Contractor should submit 3 copies of the Draft IAQ Management Plan to the Resident Engineer for approval.
   1. The Draft Plan must meet or exceed the SMACNA Best Management Practices described in Part 3 of this Section.
   2. In the Plan designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the IAQ Management Plan for the Project.
   3. Once the Resident Engineer has determined which of the BMPs contained in the above draft Plan are acceptable, submit, within 14 working days, a Final IAQ Management Plan. Distribute copies of the IAQ Management Plan to the Job Site Foreman, each Subcontractor, the Resident Engineer and the Professional.

B. IAQ Management Reports: Submit with each Progress Report a summary of IAQ Management issues. The Summary shall be submitted on a form approved by the Resident Engineer.

C. Provide a minimum of 18 photographs (3 each on 6 separate occasions), along with a brief description of the SMACNA approach employed, documenting construction IAQ management measures such as protection of ducts and on-site stored or installed absorptive materials.

D. Provide cut sheets of filtration media used during construction and installed immediately prior to occupancy with MERV values highlighted.

PART 2 - PRODUCTS

2.1 PRODUCT REQUIREMENTS

A. If air handlers must be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill.

B. Use low-emitting adhesives, sealants, paints, primers, carpets and composite wood products within the vapor barrier. This includes, but is not limited to:

1. Low or no-VOC adhesives and sealants such as
   multipurpose construction
   glazing
   pvc
   carpet and pad
   sheet flooring
   tile floor
   wood floor
   cove base
   countertop
   tile countertop
   grout sealant
   cabinetry
   laminate
   sub-base
   ductwork
   fire caulk
   acoustical
   plumbing.
2. VOC maximum limits are as follows:
   Adhesives, sealants and sealant primers.

Architectural Applications	**Voc Limit [g/L less water]**	**Specialty Applications**	**VOC Limit [g/L less water]**
Indoor Carpet Adhesives	50	PVC Welding	510
Carpet Pad Adhesives	50	CPVC Welding	490
Wood Flooring Adhesives	100	ABS Welding	325
Rubber Floor Adhesives	60	Plastic Cement Welding	250
Subfloor Adhesives	50	Adhesive Primer for Plastic	550
Ceramic Tile Adhesives	65	Contact Adhesive	80
VCT & Asphalt Adhesives	50	Special Purpose Contact Adhesive	250
Drywall & Panel Adhesives	50	Structural Wood Member Adhesive	140
Cove Base Adhesives	50	Sheet Applied Rubber Lining Operations	850
Multipurpose Construction Adhesives	70	Top & Trim Adhesive	250
Structural Glazing Adhesives	100		

Substrate Specific Applications	**VOC Limit [g/L less water]**	**Sealants**	**VOC Limit [g/L less water]**
Metal to Metal	30	Architectural	250
Plastic Foams	50	Nonmembrane Roof	300
Porous Material (except wood)	50	Roadway	250
Wood	30	Single-Ply Roof Membrane	450
Fiberglass	80	Other	420

Sealant Primers	**VOC Limit [g/L less water]**
Architectural Non Porous	250
Architectural Porous	775
Other	750

Aerosol Adhesives

Aerosol Adhesives	**VOC weight [g/L minus water]**
General purpose mist spray	65% VOCs by weight
General purpose web spray	55% VOCs by weight
Special purpose aerosol adhesives (all types)	70% VOCs by weight

Paints and Coatings

1) Architectural paints, coatings and primers applied to interior walls and ceilings: Do not exceed the VOC content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.
   a) Flats: 50 g/L
   b) Non-Flats: 150 g/L
2) Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: Do not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.
3) Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements: Do not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.
   a) Clear wood finishes: varnish 350 g/L; lacquer 550 g/L
   b) Floor coatings: 100 g/L
   c) Sealers: waterproofing sealers 250 g/L; sanding sealers 275 g/L; all other sealers 200 g/L
   d) Shellacs: Clear 730 g/L; pigmented 550 g/L
   e) Stains: 250 g/L
4) Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
5) Restricted Components: Paints and coatings shall not contain any of the following:
   a) Acrolein.
   b) Acrylonitrile.
   c) Antimony.
   d) Benzene.
   e) Butyl benzyl phthalate.
   f) Cadmium.
   g) Di (2-ethylhexyl) phthalate.
   h) Di-n-butyl phthalate.
   i) Di-n-octyl phthalate.
   j) 1,2-dichlorobenzene.
   k) Diethyl phthalate.
   l) Dimethyl phthalate.

m) Ethylbenzene.
n) Formaldehyde.
o) Hexavalent chromium.
p) Isophorone.
q) Lead.
r) Mercury.
s) Methyl ethyl ketone.
t) Methyl isobutyl ketone.
u) Methylene chloride.
v) Naphthalene.
w) Toluene (methylbenzene).
x) 1,1,1-trichloroethane.
y) Vinyl chloride.

3. Carpet systems, including carpet cushion installed in the building, must meet or exceed the requirements of the Carpet and Rug Institute's Green Label Plus Indoor Air Quality Test Program. Carpet adhesives must meet the VOC limit requirements stated above (50g/L).
4. Composite wood and agrifiber products, including core materials must contain no added urea-formaldehyde resins.
   a. Adhesives used in field and shop-fabricated assemblies containing these products must contain no urea-formaldehyde.
   b. Products may include but not limited to millwork, composite and solid doors, cabinetry, crown moldings, wood paneling and built in furnishings.

PART 3 - EXECUTION

3.1 GENERAL

A. Many Best Management Practices are available to maintain IAQ during construction or demolition. The pros, cons, and limitations of each available option should be considered to identify the most effective and most efficient approaches for a particular job. When designing the Plan, more than one of these practices may be used simultaneously or phased in) as work progresses. In general, the steps include:
   1. Containing the work area
   2. Modifying HVAC operation
   3. Reducing emissions
   4. Intensifying housekeeping
   5. Scheduling material delivery to avoid contamination

6. Protecting stored and installed absorptive materials from contamination.

3.2 REQUIRED IAQ MANAGEMENT BMPS

A. Mechanical Systems

1. Protection: All HVAC equipment must be protected from collecting dust and contaminants that can be collected in the system and later be released. Specific HVAC protection requirements generally apply to the return side, central filtration, or supply side of the system.
2. Return Side: The return side of an HVAC system is, by definition, under negative pressure and thus capable of drawing in nearby construction dust and odor. Special attention must be paid to the location of any return vents, return ducts, ceiling plenums, return shafts, VAV plenum intakes, window units, and transfer vents as well as that portion of the air handler which is upstream of the central fan. When possible, the entire system should be shut down during heavy construction or demolition that generates dust and airborne particles.
   a. All return system openings in or immediately adjacent to, the construction area should be sealed with plastic.
   b. When the system must remain operational during construction, temporary filters should be added where necessary (e.g., on grills to return air shaft). Filters used during construction must have been installed as specified in Part 2-Products and must receive frequent periodic maintenance.
   c. Replace filters at end of project with filters required by Part 2-Products. Verify that equipment is capable of accepting these filters, or notify the Resident Engineer.
   d. When the general system must remain operational, the heaviest work areas should be dampered off or otherwise blocked if temporary imbalance of the return air system does not create a greater problem.
   e. The mechanical room should not be used to store construction or waste materials.
3. Supply Side:
   a. Diffusers, terminal units, and ducts may be adequately protected in most cases where the above measures are implemented. When the system is off for the duration of construction, diffusers and

window units should also be sealed with plastic for further protection.

b. Ducts, diffusers, and window units should be inspected upon completion of the work for the amount of deposited particulate present and cleaned where needed. If significant dust deposits are observed in the system during construction, some particulate discharge can be expected during start-up. When such a discharge is only minor, delaying re-occupancy long enough to clean up the dust may be sufficient. In more severe cases, installing temporary coarse filters on diffusers or cleaning the ducts may be necessary. The condition of the main duct should be checked whenever visible particles are discharged from the system.

B. Materials Handling: Protect construction materials from contamination and pollution from contact with construction dust, debris, fumes, solvents, and other pollutants.

1. The design of each system must be evaluated in detail to determine how it may be affected by odor and dust from the project (including site egress, staging areas, etc.).
2. Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
3. Protect stored on-site or installed absorptive materials from moisture damage.
4. Hazardous wastes shall be separated, stored, and disposed of according to local regulations.
5. Schedule delivery of materials to minimize the duration of on-site storage.

C. VOC Control: Schedule installation of materials to minimize contamination of absorptive materials with VOCs, solvents, dust, etc. (For example, install carpet after painting has been completed, since carpet can absorb VOCs released while the paint dries).

1. All dry furnishings and materials (such as carpet, floor tile, acoustical tile, textiles, office furniture, wood shelving, etc.) shall be allowed to "air-out" or pre-condition prior to installation.

2. "Bake-outs" of furnishings and construction materials is not recommended due to questionable effectiveness and potential for damage.
   a. Reduce exposure to VOCs as follows:
   b. An enclosed tanker is preferable to an open kettle for roofing.
   c. Containers of wet products should be kept closed as much as possible.
   d. Waste materials that can release odor or dust should be covered or sealed.
   e. Applying a sealer may control a surface that is persistent odor source.

D. Inspection: Conduct regular inspection and maintenance of indoor air quality measures including ventilation system protection.
   1. Ductwork and appurtenances should be inspected upon completion of the work for the amount of deposited particulate present and cleaned where needed.
   2. Both highly specialized equipment and professional expertise may be required to ensure that dust is effectively removed and contained.
   3. The sequence in which duct cleaning occurs in the overall construction process needs to be carefully considered to avoid recontamination.

E. Modifying Equipment Operation: Use of equipment may need to be restricted in order to meet IAQ objectives. This could involve substituting cleaner equipment or simply changing operating Procedures. Examples of such controls include:
   1. Restricting traffic volume or prohibiting idling of motor vehicles where emissions could be drawn into occupied areas.
   2. Switching from diesel to biodiesel or bottled gas for equipment such as generators or fork lifts (emissions are cleaner but still potentially harmful under some circumstances). Use of electric fork lifts and other equipment should be considered when feasible, since they do not burn fossil fuels, thus eliminating exposure to combustion gas emissions.

F. Use low-toxic cleaning supplies for surfaces, equipment and worker’s personal use. Options include Green Seal, citrus-based or soy-based solvent cleaners.
   1. Refer to Green Seal website for a list of approved products at www.greenseal.org/certproducts.htm

G. Changing Work Practices: For some demolition tasks (e.g., paint stripping) there may be techniques available that produce less airborne dust. Some painting techniques release fewer odors. Some cleaning practices raise less dust.

H. Use wet sanding for gypsum assemblies. Exception: Dry sanding allowed subject to Owner approval of the following measures.
   1. Full isolation of space under finishing.
   2. Plastic protection sheeting is installed to provide air sealing during the sanding.
   3. Closure of all air system devices and ductwork
   4. Sequencing of construction precludes the possibility of contamination of other spaces with gypsum dust.
   5. Worker protection provided.

I. Local Exhaust: Pollution sources can be directly exhausted to the outside. This may be done through an exhaust system already available in the building or more often by a portable fan vented to the outside and attached to the work site by flex duct. Depending on the nature of the material and the location of the exhaust, special filtration of the exhaust may or may not be necessary. Any emissions to the outside must be in compliance with applicable regulations and should be directed well away from intakes.

J. Air Cleaning: Where exhaust is not feasible, local re-circulation of air through a portable air cleaner may be effective. The type of filter should be suitable for the material being controlled (e.g., charcoal or potassium permanganate for many odors, a moderate to high efficiency filter for dust).

- - -END- - -